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THE TISSUE REACTION IN MALIGNANT EPITHELIOMAS OF THE SKIN

ITS VALUE IN DIAGNOSIS AND IN PROGNOSIS *

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A survey of the literature dealing with this particular phase of the cancer problem indicates that surprisingly little investigation has been made in this direction. It was Borst's opinion [1] that the parenchyma of the epithelioma is often retarded by the new connective tissue development roundabout. According to Unna's rule,[2] "The cellular infiltration of the cutis increases with the activity of the epithelial growth, when the epithelial margin is the seat of marked proliferation."

Concerning the presence of plasma cells, Aschoff, Ribbert and Borst say little. In 1891, Jadassohn [3] referred to the "encircling wall of plasma cells and leukocytes," and Unna,[2] describing the plasmoma of Paget's disease, characterizes it as "a bulwark of defense against cancer invasion." Reviewing a series of twenty-eight cases of epithelioma, Unna reports that fourteen contained many plasma cells, variously distributed, but often encircling the epithelioma. He also found numerous mast cells, usually in inverse ratio to the number of plasma cells present. The striking participation of the mast cell moved him to suggest that carcinoma should not be too widely separated from other chronic inflammatory processes. With Joannowicz,[1] he asserted that the rate of tumor growth is in inverse proportion to the number of plasma cells. Prytek [1] has studied a series of thirty-eight cases from Jadassohn's and other clinics, and he noted that the specimens with many mitoses often contained few plasma cells. However, he concludes that plasma cells, while not always present, "are often numerous, but bear no constant relationship to the type of neoplasm, nor to the presence

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1. Prytek: The Plasma Cells in Epithelioma of the Skin, Arch. f. Dermat. u. Syph. **120**:611, 1914.

2. Unna: Histopathology (Walker's translation), New York: Macmillan Co., 1896.

3. Jadassohn: Verhandl. d. deutsch. Dermat. Gesellsch., Leipzig, 1891.

TABLE 1.—THE FINDINGS IN 100 CASES STUDIED *

Slide No.	Type of Tumor	Rate of Growth	Depth of Corium Invaded (¼, ½ or All)	Connective Tissue Degeneration (0, 1, 2, 3 or 4)			Connective Tissue Growth (0, 1, 2, 3 or 4)	Fibroblasts (0, 1, 2, 3 or 4)	0, 1, 2, 3 or 4			Especially Perivascular?	Mitoses (0, 1, 2, 3 or 4)	Appearance of Epithelioma Cells	Remarks
				Hyaline Type	Basophilic Type	Depth of Corium Invaded (½ or All)			Polymorphonuclears	Lymphocytes	Plasma Cells				
1	Early (?) prickle	Fairly rapid	All	2	2	All	—	—	1	4	0	No	—	Hardy	Acanthosis
2	Late prickle	Slow	All	3	3	All	1	2	1	4	0	No	Few	Many hyaline	Acanthosis
3	Early (?) prickle	Slow	All	2	0	All	Very slight	1	0	2	2	No	Few	Faded	Slight acanthosis
4	1 year basal	Slow	½	Slight	1	All	—	1	1	2	2	Somewhat	1	Fairly hardy	Acanthosis
5	Early basal	Slow	¼	0	1	½	—	2	0	2	0	No	2	Hardy	Epidermis thin
6	Early prickle	Rapid	All	—	—	—	—	—	2	1	0	—	3	Hardy	Hyaline vessels; acanthosis
7	Late prickle	Rapid	All	4	4	All	2	2	1	3	2	No	1	Hardy hyaline	Hyaline vessels; acanthosis
8	Late basal†	Fairly slow	All	3	3 U‡	All	1	2	1	2	0	No	1	Hardy	Epidermis thin
9	Early basal	Fairly slow	Not ¼	1	1 U	½—	Slight	1	0	2	1	No	1	Hardy	Epidermis thin§
10	Early basal	Fairly slow	Not ¼	1	1 U	All	1	2	0	2	1	No	Few	Fairly hardy	Epidermis thin
11	Late prickle	Rapid	All	1 U ‡	1	All	3	2	0	4	0	Somewhat	2	Hardy	Acanthosis
12	Early basal	Slow	¼	1	1 U	All	1	2	0	3	3	No	Very few	Hardy	Epidermis thin
13	Early prickle	Rapid	¼	1	1	All	—	1	1	4	0	No	4	Hardy	Acanthosis
14	Early prickle	Rapid	¾	3	0	All	2	2	1	3	1	No	Few	Mostly hardy	No epidermis
15	Early prickle	Rapid	All	1	0	All	Slight	1	1	2	0	No	0	Fairly hardy	Slight acanthosis ?
16	Early basal	Slow	¼	0	1 U	¼—	1—	1	0	1	0	No	—	Fairly hardy	Epidermis thin§
17	Early prickle	Rapid	All	1	1	All	0	Few	1	2	1	No	0	Fairly hardy	Acanthosis
18	Early basal	Slow	½	Slight	1	All	Slight	1	1	2	0	No	1	Hardy	Epidermis thin
19	Early prickle	Fairly rapid	All	1	1	All	3	3	2	1	1—	No	1	Hardy hyaline	
20	Early prickle	Rapid	All	1	0	All	2	2	0	2	1	No	1	Hardy hyaline	Hyaline vessels; acanthosis
21	Early basal	Slow	½	1	1	All	1	2	0	3	0	No	Few	Hardy	Epidermis thin
22	Early prickle	Rapid	All	1	0	All	Slight	1	0	2	0	Somewhat	0	Hardy hyaline	Acanthosis
23	Late prickle	Fairly rapid	All	1	1	All	Slight	2	2	1	3	Yes	Few	Faded hyaline	Hyaline vessels; acanthosis
24	Early basal	Slow	Not ¼	1	1	¼	Slight	1	0	1	1—	No	1—	Fairly hardy	Epidermis thin
25	Late basal	Fairly slow	All	1	1	All	—	1	0	1	1—	No	1—	Hardy	
26	Late basal	Slow	All	2	2	All	Slight	1	1—	3	1	No	0	Variable	After 2 roentgen ray doses
27	Late basal	Slow	All	1	1	All	1	2	0	1	1—	No	2	Hardy	Epidermis thin
28	Early prickle	Rapid	Not ¼	1	1	¼	0	0	0	3	1	Yes	1	Fairly hardy	Slight acanthosis
29	Early basal	Slow	½	1	1	½	Slight	1—	2	2	1	No	1—	Fairly hardy	Epidermis thin
30	Early prickle	Rapid	½	2	2	All	Slight	2	2	1	3	No	1	Hardy	Acanthosis
31	Late basal	Fairly slow	All	2	2	All	1	3	2	1	0	No	2	Hardy	No epidermis
32	Late basal	Slow	½	1	1	All	Slight	1—	1—	2	1—	No	3	Hardy	Epidermis thin§
33	9 mo. (?) prickle	Fairly rapid	All	1	1	All	1	1—	1	1	1	Yes	1	Fairly hardy	Acanthosis
34	Early prickle	Fairly rapid	Not ¼	1	1—	¼	0	1—	1—	1	0	No	1—	Fairly hardy	Acanthosis
35	Early prickle	Rapid?	Not ¼	1	1—	¼	0	1—	1—	2	1—	No	1—	Fairly hardy	Vessels hyaline; acanthosis
36	Early prickle	Rapid	All	1	1	All	1	1	1—	2	1—	No	1	Hardy	Acanthosis
37	Late basal	Fairly slow	All	1	1	All	Slight	1—	1	1	0	No	1	Hardy	Epidermis thin
38	Late basal	Fairly slow	All	1	1	All	0	2	1	1	1—	No	1	Hardy	Epidermis thin
39	Early basal	Fairly slow	½	1	1	All	Slight	1	1—	1	1—	No	1—	Hardy	Epidermis thin; ulcer
40	Late basal†	Fairly slow	All	1—	0	All	0	1—	0	1—	0	No	1—	Hardy	Epidermis thin; metas.?
41	Early basal	Fairly slow	¼	0	1—	¼	0	1—	0	1	1	Yes	1	Hardy	Epidermis thin
42	Early prickle	Fairly rapid	All	1	1	All	Slight	1—	2	1	1	Yes	1	Some hyaline	Vessels hyaline; acanthosis
43	Early basal	Slow	Not ¼	1	1	All	1	1	0	1	2	No	1—	Hardy	Epidermis thin
44	Early prickle	Fairly rapid	½	1	0	All	Slight	1—	0	1	0	Somewhat	1—	Fairly hardy	Hyaline vessels; acanthosis
45	Early prickle	Rapid	½	1	1—	All	Very slight	1—	1	3	1—	Yes	1	Hardy	Acanthosis
46	Early prickle	Rapid	½	1	0	All	Very slight	1—	0	2	0	Somewhat	1—	Fairly hardy	Acanthosis
47	Late basal	Slow	½	1—	1	All	Slight	1	1	1	2	No	2	Hardy	Epidermis thin
48	Late basal	Fairly rapid	All	1	1	All	0	1—	1	1	1—	Yes	2	Hardy	Epidermis thin
49	Late basal	Fairly rapid	All	1	1	All	Slight	1—	1	1	0	No	1	Hardy	Slight acanthosis ?
50	Late basal	Fairly slow	All	2	2	All	Slight	1	1	1	1—	No	2	Hardy	Slight acanthosis

51	Early basal	?	Not ¼	1	1	All	0	1—	1—	2	1—	No	1—	Hardy	Epidermis thin
52	Late prickle	Fairly slow	All	1	1	All	2	1	0	2	0	Somewhat	1	Hardy	Acanthosis
53	Early prickle	Fairly rapid	Not ¼	1	1	All	Slight	1	1—	3	1—	Yes	1	Fairly hardy	Pegs acanthotic; epidermis thin
54	Late basal	?	All	0	1	All	2	3	2	1	0	No	1—	Hardy	Floor of ulcer
55	Late basal	Fairly slow	All	1	2	All	1	1	0	1	0	No	1—	Fairly hardy	Epidermis thin
56	Late basal†	Fairly slow	All	1	0	All	1	1	0	1	0	No	1—	Hardy	Epidermis thin
57	Early basal	Fairly slow	¼	1—	1—	¼	0	0	1—	2	1	No	1	Hardy	Epidermis thin
58	Late basal	Fairly rapid	¾	Stain poor			Slight	1—	0	1	0	Yes	1—	Fairly hardy	Thickness of epidermis varies
59	Late prickle	Fairly rapid	All	1	1—	All	0	0	1	1	1—	Yes	1—	Fairly hardy	Vessels hyaline; acanthosis
60	Late prickle	Fairly rapid	All	1	0	All	0	0	0	1	0	No	1—	Faded	Acanthosis
61	Late basal	Fairly slow	All	0	2	All	0	0	0	1—	3	No	1—	Variable	Epidermis thin
62	Early basal	Fairly slow	¼	1	1	¼	Slight	1—	0	2	1	No	1—	Hardy	Epidermis thin
63	Late prickle	Fairly rapid	All	1	0	All	—	—	1	1—	1—	Slightly	2	Hardy	Vessels hyaline; acanthos's; pearls
64	Late basal	Fairly rapid	All	1—	1	All	Slight	1—	0	1—	0	No	1—	Hardy	Epidermis thin
65	Early prickle	Fairly rapid	All	1	Stain poor		2	1	1	1	0	No	1	Hardy	Vessels hyaline; acanthosis
66	Late prickle	Fairly rapid	All	1	1—	All	Very slight	1—	1	1	3	Yes	1	Hardy	Vessels hyaline; acanthosis
67	Early basal	Fairly slow	¼	1—	2	All	Slight	1—	1—	1	2	No	1—	Variable	Roentgen rayed
68	Early prickle	Fairly rapid	All	2	1—	All	0	0	1	2	1	No	1	Hardy	Vessels hyaline; acanthosis hyperkeratosis
69	Early prickle	Fairly rapid	All	2	1—	All	Very slight	1—	0	1	1	Somewhat	1—	Degenerative	Vessels hyaline; acanthosis
70	Late prickle	Fairly rapid	All	1	1	All	Very slight	1	1	2	1—	Yes	1—	Fairly hardy	Slight acanthosis
71	Early prickle	Fairly rapid	Not ¼	2	2	¼	1	1	0	1	4	Yes	1—	Hardy	Acanthosis and hyperkeratosis
72	Early basal	Fairly rapid	¼	1	1	All	2	2	1—	1	3	No	1—	Hardy	Acanthosis
73	Early prickle?	Fairly rapid	½	1	1	All	Slight	1—	0	2	0	No	1—	Fairly hardy	Nevus ?; acanthosis
74	Early prickle	Fairly rapid	½	1—	1—	½	Slight	1—	1	2	1—	No	1	Hardy	Acanthosis
75	Early prickle	Fairly rapid	All	1	0	All	Very slight	1—	1	1	1	Yes	2	Hardy	Acanthosis and hyperkeratosis
76	Early basal	Fairly slow	¼	1—	2	¼	0	0	1—	1—	3	No	1	Hardy	Acanthosis, parakeratosis and hyperkeratosis
77	Early basal	Fairly rapid	½	2	3	All	0	0	2	1	0	Somewhat	1—	Hardy	Nevus pigmentosus; acanthosis
78	Early prickle	Fairly rapid	½	3†	2	All	Very slight	1—	0	3	0	Yes	1—	Hardy	Vessels hyaline; acanthosis
79	Early prickle	Very rapid	½	1	1	All	0	0	1—	1—	0	No	1—	Fairly hardy	Acanthosis and hyperkeratosis
80	Early prickle	Fairly rapid	½	1	1	All	Slight	1	1	1	2	Yes	1—	Fairly hardy	Acanthosis
81	Early prickle	Fairly rapid	¾	1	1	All	Very slight	1	2	2	1—	No	1—	Faded	Vessels hyaline; acanthosis
82	Early basal	Fairly slow	¼	0	1	¼	1	1	0	1	0	No	1—	Fairly hardy	Epidermis thin
83	Early basal	Fairly rapid	½	1	1	All	1—	1	0	2	1—	No	1—	Fairly hardy	Pegs long; epidermis thin
84	Early prickle	Rapid	¼	1	0	All	0	0	0	1	3	Somewhat	1—	Fairly hardy	Paget's disease; vessels hyaline
85	Early prickle	Rapid	½	1	0	½	2	2	0	2	0	No	1—	Fairly hardy	Acanthosis and hyperkeratosis
86	Late basal	Slow	All	1	1	All	1	1	1	2	1	No	—	Hardy hyaline	
87	Early basal	Slow	¼	1	1	All	On	1—	0	1	1—	No	1	Hardy	Nevus papillomatosus; acanthosis
88	Late prickle	Fairly rapid	All	1	0	All	1	2	1—	2	1—	No	1—	Fairly hardy	Acanthosis
89	Early basal	Fairly slow	½	1—	1	½	0	1—	0	1	0	No	1	Fairly hardy	Epidermis thin
90	Early basal	Fairly rapid	½	1—	1—	½	Slight	1	0	1	0	No	1—	Fairly hardy	Epidermis thin
91	Late basal	Slow	All	2	2	All	2	1	0	1	0	No	1—	Many degen.	Slight acanthosis
92	Late basal	Fairly slow	¾	1	1	All	1	1	1—	1	1—	No	0	Many degen.	Epidermis thin
93	Early prickle	Fairly rapid	All	1	0	All	Slight	1—	0	1	2	No	1	Fairly hardy	Vessels hyaline; acanthosis
94	Early prickle	Fairly rapid	¼	1	1	¼	0	0	0	1	1	Slightly	1—	Hardy	Slight acanthosis
95	Late prickle	Fairly rapid	All	1	0	All	0	0	2	2	0	No	1	Hyaline hardy	Ulcer
96	Late basal†	Fairly slow	¾	1	1—	All	2	1	1	0	1	No	1—	Some degen.	Slight acanthosis
97	Late basal	Fairly slow	All	1	1—	All	3	2	0	2	0	No	2	Very hardy	Epidermis thin
98	Early prickle	Rapid	¼	2	0	All	1	1	1	1	1	No	1—	Fairly hardy	Vessels hyaline; acanthosis
99	Early prickle	Fairly slow	¾	1	0	All	2	2	1	1	1	Slightly	1	Hardy	Vessels hyaline
100	Early basal	Fairly slow	½	1—	1	All	Slight	1	0	1	0	No	1—	Fairly hardy	Epidermis fairly thin

* Under certain of the headings, the figures 0, 1, 2, 3 or 4 are used to designate the relative amounts, 4 representing the highest observed. By 1— ("one, minus") is meant the presence of a very small amount, whereas the figure 1 alone signifies a fair amount.

† Cylindroma. ‡ U means upper corium; black figure signifies predominance. § Epithelioma seen budding from epidermis.

or absence of ulceration, nor to the rate of tumor growth." From animal experiments, DaFano [4] has concluded that plasma cells as well as lymphocytes appear to be agents of the immunity process. McDonagh [5] believes that the plasma cell is present as an oxidizer of the deteriorating epithelioma cells.

Beginning in 1915, Murphy and his collaborators [6] of the Rockefeller Institute apparently showed the lymphocyte to be a bearer of tissue immunity against malignant invasion, upholding the views of DaFano in this respect. Itami [7] later claimed to have raised the immunity of animals against cancer by injecting lymph node extract. Mitoses have been reported as being very numerous in the spleen after tumor inoculation.[8] However, the work of Sittenfeld [9] and of Bullock and Rohdenburg,[10] the latter using splenectomized animals, tends to disprove the theories of DaFano and Murphy and to show that the lymphocyte, after all, is not necessarily the agent of immunity. Woglom [11] found that the spleens of immunized and inoculated rats were not enlarged; and Prime,[12] as the result of recent extensive observations, reaches the following conclusions: "Decreasing the circulating lymphocytes by small doses of roentgen ray does not render mice more susceptible to the inoculation of a spontaneous tumor from another mouse of the same strain. Mice with spontaneous lymphocytosis are not resistant to the implantation of a primary tumor from another mouse of the same strain." Thus far, animal experiments have been limited to work with epitheliomas of the prickle cell type, only one case of basal cell epithelioma, occurring in a rat, having been reported.[13]

Here and there throughout the literature, the apparent relationship between chronic inflammation and the development of epithelioma is alluded to, some authorities stating that, without previous chronic inflammation, cancer does not exist (Billroth's dictum). According to McDonagh,[5] the occurrence of epithelioma follows a chronic inflammation, which produces lipoid-globulin substances in the cells.

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4. DaFano: Ztschr. f. Immunitätsforsch. u. exper. Therap., Orig. **5**:1, 1910.
5. McDonagh: The Epithelial Changes in Inflammation and Their Relationship to Malignant Epithelioma, Arch. f. Dermat. u. Syph. **120**:289, 1914.
6. Murphy, J. B.: J. Exper. M. **22**:204, 1915; **25**:609, 1917; **29**:25 (Jan.) 1919. Murphy, J. B., and Nakahara, W.: J. Exper. M. **31**:1 (Jan.) 1920.
7. Itami: J. Cancer Res. **4**:23 (Jan.) 1919.
8. Murphy, J. B., and Nakahara, W.: Footnote 6, fourth reference.
9. Sittenfeld, M. J.: J. Cancer Res. **2**:151 (April) 1917.
10. Bullock, F. D., and Rohdenburg, G. L.: J. Cancer Res. **2**:455, 465 (Oct.) 1917.
11. Woglom: J. Cancer Res. **4**:281 (July) 1919.
12. Prime, F.: J. Cancer Res. **6**:1 (Jan.) 1921.
13. Morris, D. H.: J. Cancer Res. **5**:147 (April) 1920.

With the purpose of further investigation, we have examined the slides from 100 human epitheliomas, noting the following points in each: the type of the tumor, whether basal or prickle cell; its apparent age and rate of growth; the depth of its extent into the underlying corium; the appearance of the cells of the tumor parenchyma and the number of mitotic figures observed; the state of the overlying epidermis, whether thinned or acanthotic; and the characteristics of the stroma, including the connective tissue degeneration, its degree, location and type (whether hyaline or basophilic), the growth of new connective tissue, and the types and relative numbers of the plasma cells, lymphocytes and polymorphonuclear leukocytes, their relation to the

TABLE 2.—AN ANALYSIS OF THE FINDINGS IN FIFTY PRICKLE CELL AND FIFTY BASAL CELL EPITHELIOMAS

Findings	Basal Cell		Prickle Cell	
	Typical	Otherwise	Typical	Otherwise
Epithelioma arising from thin epidermis	24	..	..	..
Signs of a preceding inflammatory process	..	45	50	..
Noninflammatory	5	..	..	..
Epidermis acanthotic	..	8*	45	..
Epidermis thin	35	..	..	..
Infiltration of lymphocytes alone	21	..	..	17
Lymphocytes and plasma cells	..	27†	..	35‡
Infiltration of plasma cells alone	..	..	..	..
Cellular infiltration perivascular	..	4	19	..
Connective tissue degeneration basophilic only	5	..	..	..
Connective tissue degeneration basophilic and hyaline	..	41	..	34
Connective tissue degeneration hyaline only	..	2	15	..
Connective tissue degeneration in upper corium basophilic only	18	..	..	..
Connective tissue degeneration in upper corium basophilic and hyaline	..	20	..	20
Connective tissue degeneration in upper corium hyaline only	..	..	26	..
Hyaline changes in vessel walls	..	..	19	..
Fibrosis	..	44§	..	40§
Mitoses in epithelioma cells	..	45¶	..	48¶
Epithelioma cells of hardy appearance	..	46	..	47
Epithelioma cells of faded appearance	..	2	..	3

* Cylindromas, nevi, etc.
† Plasma ++ in seventeen.
‡ Plasma ++ in twenty-one.
§ Fibrosis ++ in thirteen.
¶ Mitoses ++ in six.

blood vessels, and the condition of the vessel walls, especially as to the presence or absence of hyaline degeneration. The specimens had been fixed in Bouin's solution and stained with hematoxylin and eosin; a few were stained with hematoxylin orange and acid fuchsin. Fifty of the specimens were from basal cell epitheliomas, while the remaining fifty were of the prickle cell variety, all stages of development and various rates of growth being represented. The basophilic degeneration noted was of the so-called mucoid type, such as that occurring in senile atrophy of the skin, and the hyaline or acidophilic degeneration was that which accompanies chronic interstitial inflammation; its location in the derma was noted, and the locations in which each type of

degeneration predominated, whether immediately beneath the epidermis or deeper. The stain did not permit an examination for mast cells, nor could the elastic tissue be studied. The results have been tabulated as shown in Table 1, presenting the findings in each case, and these findings have been summarized in Table 2.

RESULTS OF OBSERVATIONS

1. Neoplasms of the epidermis, associated with thinning of the remaining epidermis and not accompanied by a chronic inflammatory process, usually are basal cell epitheliomas (Fig. 1).

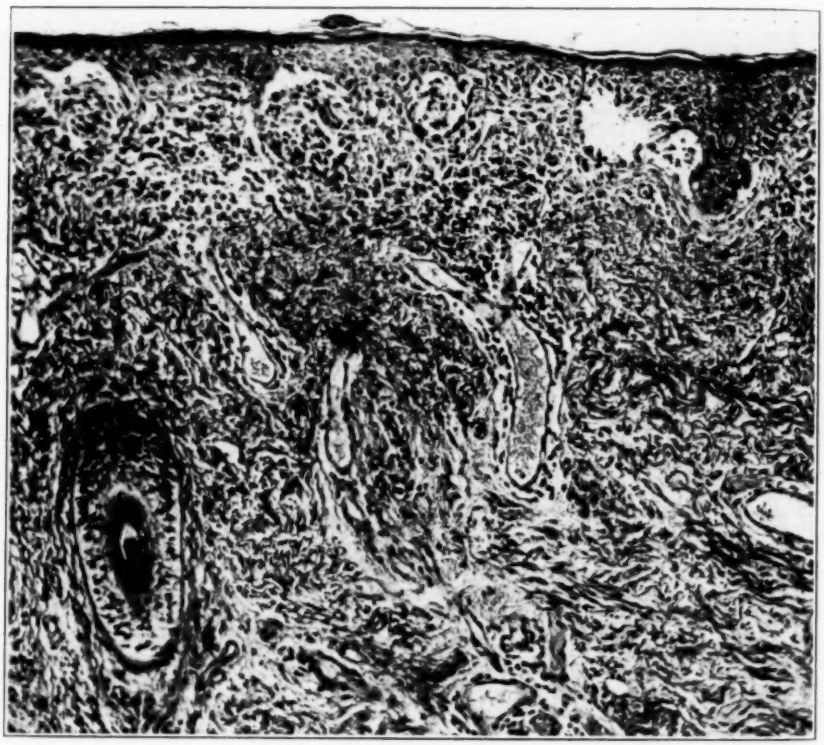

Fig. 1.—Neoplasms of the epidermis, associated with thinning of the remaining epidermis and not accompanied by a chronic inflammatory process, are usually basal cell epitheliomas; compare Slide 16.

2. If these basal cell epitheliomas are slow growing, they usually present slight inflammatory tissue reaction, with lymphocytes as the predominant cells (Fig. 2).

3. If a basal cell epithelioma is accompanied by much tissue reaction, we find a mixture of lymphocytes and plasma cells (Fig. 3).

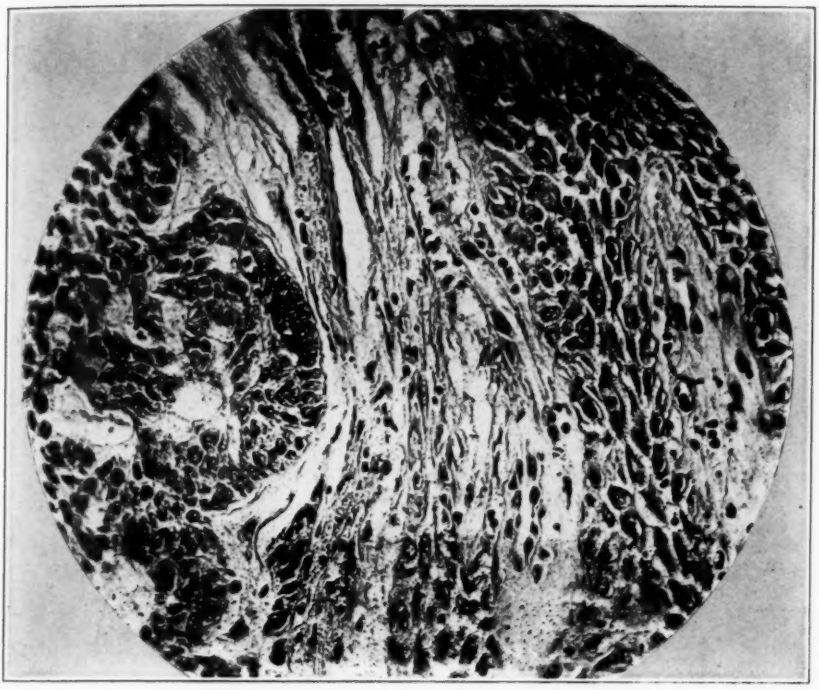

Fig. 2.—If these basal cell epitheliomas are slow growing, they usually present slight inflammatory tissue reaction, with lymphocytes as the predominant cells; compare Slide 18.

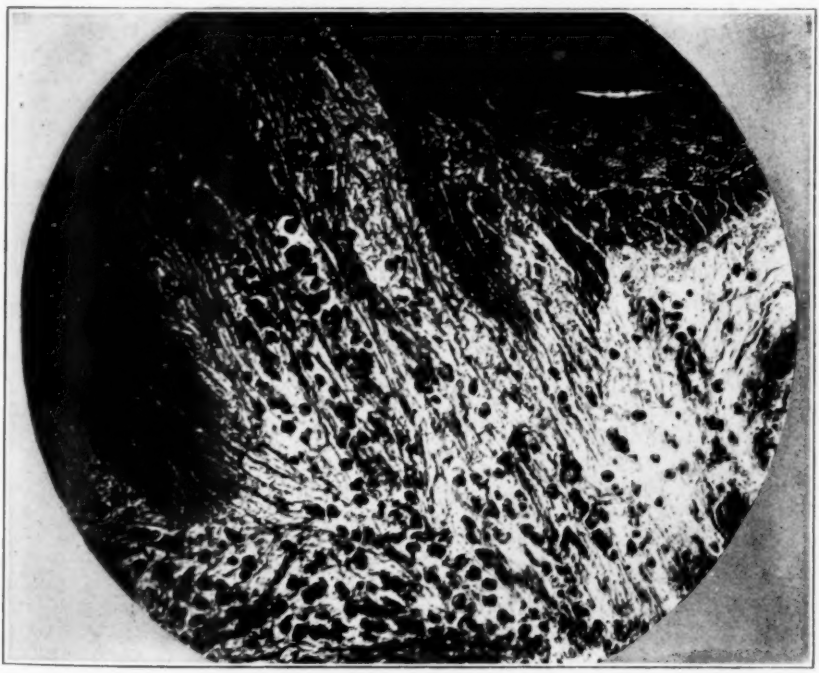

Fig. 3.—If a basal cell epithelioma is accompanied by much tissue reaction, we find a mixture of lymphocytes and plasma cells; compare Slide 12.

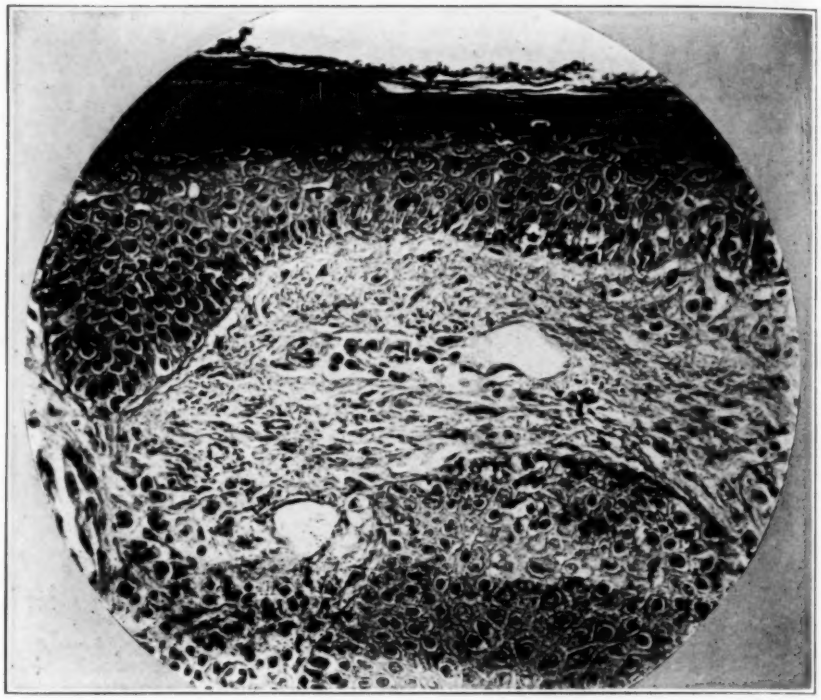

Fig. 4.—When a basal cell epithelioma is slow growing, as a rule we find little evidence of connective tissue degeneration, and vice versa; but there is always some connective tissue degeneration. In basal cell epitheliomas, the type of connective tissue degeneration is prevailingly basophilic rather than hyaline; compare Slide 5.

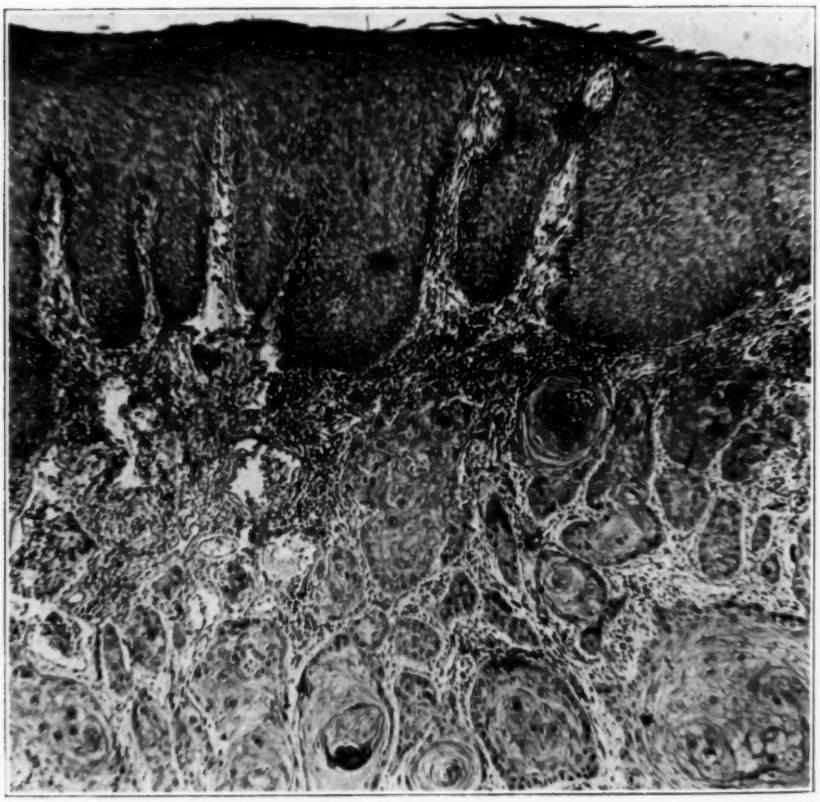

Fig. 5.—The prickle cell epithelioma is always associated with evidences of a chronic inflammatory process, for example, acanthosis or hyperkeratosis; compare Slide 59.

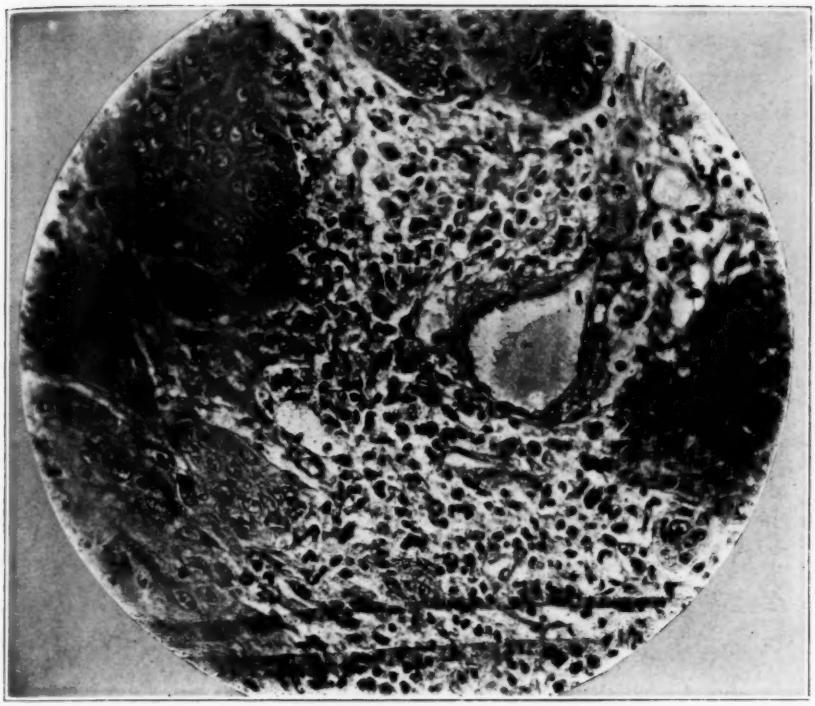

Fig. 6.—This chronic inflammatory process has ordinarily been present for a long time, so that the tissue has had time to develop a certain amount of resistance, as evidenced by the proliferation of connective tissue, by the presence of plasma cells, and by changes in the blood vessels; compare Slide 7.

The slow development of a prickle cell epithelioma is accompanied by the appearance of plasma cells (Slide 7).

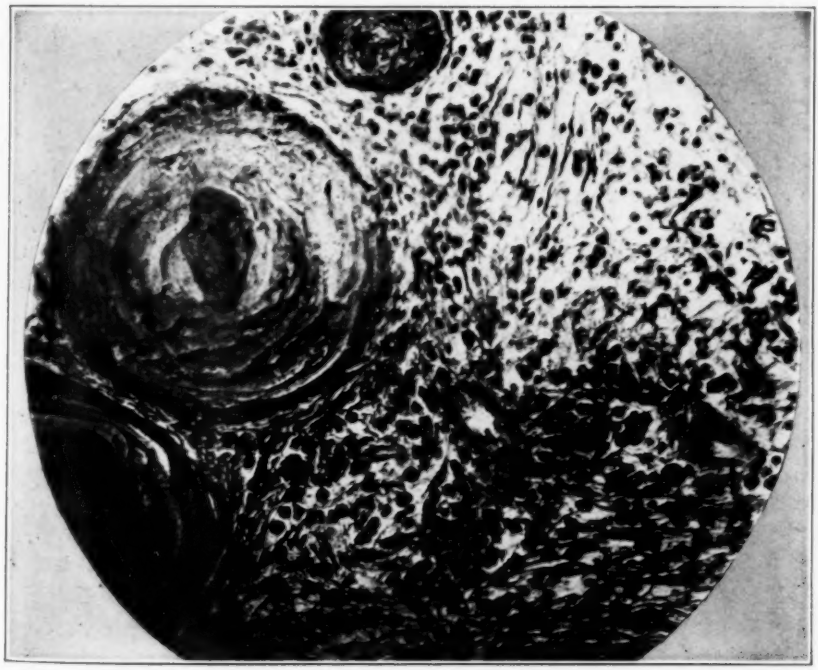

Fig. 7.—This preceding chronic inflammatory process is a complicating factor, according to the nature of its pathologic picture; compare Slide 93.

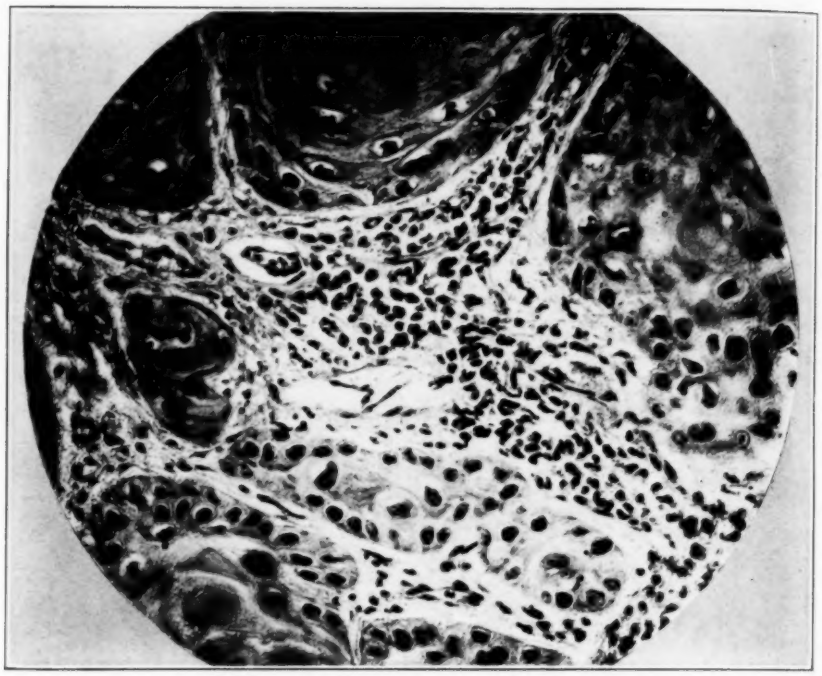

Fig. 8.—Connective tissue degeneration in prickle cell epitheliomas is more hyaline than basophilic, as a rule; compare Slide 98.

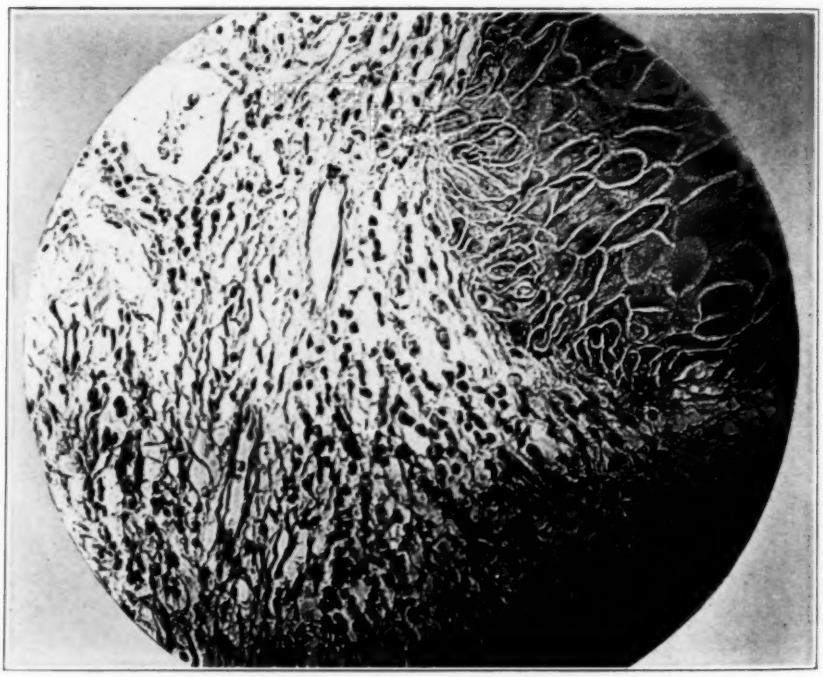

Fig. 9.—The rapid development of a prickle cell epithelioma is accompanied by lymphocytes; compare Slide 1 (Highman).

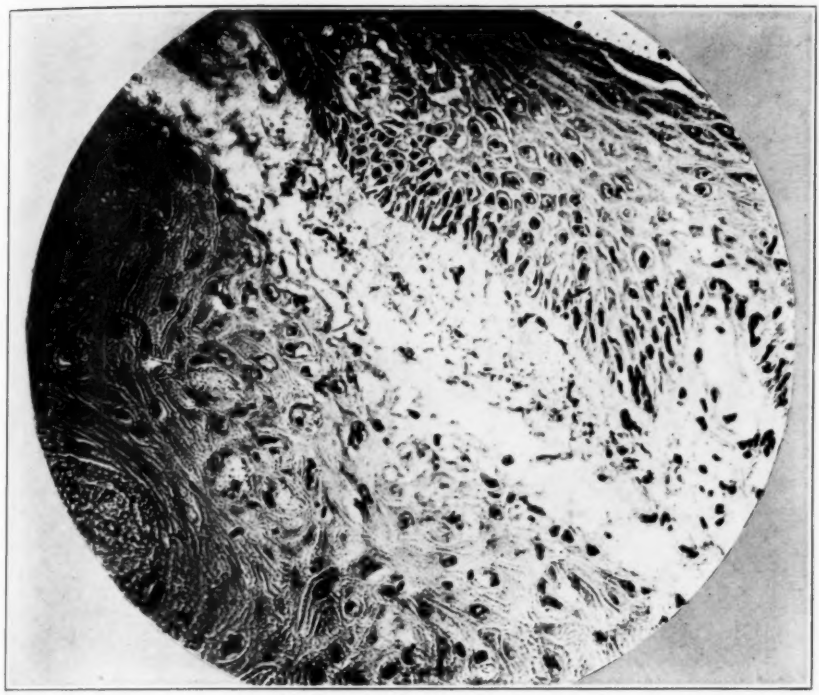

Fig. 10.—The number of plasma cells and, to a somewhat less extent, the number of lymphocytes, vary directly with the amount of hyaline degeneration of the connective tissue. Here it is slight.

Fig. 11.—A typical prickle cell epithelioma; compare Slide 28.

4. When a basal cell epithelioma is slow growing, as a rule, we find little evidence of connective tissue degeneration, and vice versa; but there is always some connective tissue degeneration (Fig. 4).

5. In basal cell epitheliomas, the type of connective tissue degeneration is prevailingly basophilic rather than hyaline (Fig. 4).

6. The prickle cell epithelioma is always associated with evidences of a chronic inflammatory process; for example, acanthosis or hyperkeratosis (Fig. 5).

7. This chronic inflammatory process has ordinarily been present for a long time, so that the tissue has had time to develop a certain amount of resistance, as evidenced by the proliferation of connective tissue, by the presence of plasma cells, and by changes in the blood vessels (Fig. 6).

8. This preceding chronic inflammatory process is a complicating factor, according to the nature of its pathologic picture. (Fig. 7: prickle cell epithelioma in tissue affected by lupus vulgaris.)

9. Connective tissue degeneration in prickle cell epitheliomas is more hyaline than basophilic, as a rule (Fig. 8).

10. The rapid development of a prickle cell epithelioma is accompanied by the presence of lymphocytes (Fig. 9). The slow development of a prickle cell epithelioma is accompanied by plasma cells (Fig. 6).

GENERAL CONCLUSIONS

1. The number of plasma cells and, to a somewhat less extent, the number of lymphocytes, vary directly with the amount of hyaline degeneration of the connective tissue. (Compare Figure 10, showing a slight amount, and Figure 8, showing a great amount.)

2. The apparent strength of the cancer cells and the number of mitoses bear no constant relationship to any other feature, nor to each other.

3. Mitotic figures may be entirely lacking, and they are usually not so numerous as might be expected.

4. The number of plasma cells in prickle cell epitheliomas varies directly with the number of pearls, as a rule.

5. Plasma cells are never found in the absence of hyaline degeneration.

6. As the number of plasma cells is an indication of the degree of resistance (immunity) of the tissue (derma), the malignancy of the neoplasm varies inversely in proportion to the number of plasma cells. The more malignant the process, the less the number of plasma cells, showing that the neoplasm is developing so rapidly that the tissue has not the time to develop any resistance. (This is a note of prognostic value.) (Figure 4 represents a typical basal cell epithelioma, and Figure 11 a typical prickle cell epithelioma.)

EXPECTANCY IN ROENTGEN-RAY TREATMENT OF SKIN LESIONS FROM THE PATHOLOGIC STANDPOINT *

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Skin lesions of the most diversified types, unrelated in causation and structure, respond to treatment with the roentgen rays. Conversely, lesions apparently related will often show varied responses to this peculiar agent. Nothing could be more completely unrelated than a basal cell epithelioma and a psoriasis lesion, and yet they resolve under irradiation. Psoriasis and parapsoriasis are apparently cousins under the microscope, but parapsoriasis is uninfluenced by the roentgen rays. Acne, with no apparent anatomic similarity to any of the foregoing conditions, affords one of the most brilliant examples of responsiveness to roentgenotherapy. What is there to reconcile the implied divergencies?

Reflection will reveal that there are a sufficient number of common denominators to relate these phenonema in nearly all instances. Certain effects of the roentgen rays are understood. It is known that in varying doses they either stimulate, inhibit or destroy the reproductive property of cells. This is particularly true of embryologic cells, reproductive cells, secretory cells and certain groups of abnormal cells, whether inflammatory or neoplastic. It is also known, as would follow from their effect on secretory cells, that the roentgen rays diminish or entirely destroy gland function.

In overdosage, the roentgen rays attack particularly elastic tissue, glands and the normal proliferative power of the skin. Through their effect on the elastic tissue, there are two distinct results; the arterioles lose their elasticity and the corium tends to atrophy. In a word, one of the striking morbid effects of the roentgen rays on the skin, is to produce artificially, from beginning to end, a series of events absolutely paralleling the picture of scleroderma. Should the destruction be slight, no permanent damage is done; should it be severe, even necrosis may take place. At the same time that these changes develop, the sweat glands, oil glands and hair papillae shrink or entirely disappear, the skin thus becoming dry and brittle. Pigmentation of the skin and keratoses, either due to the roentgen rays or byproducts of their effect, supervene, the keratoses at times terminating malignantly. We thus have artificially produced by the roentgen rays a second great skin picture closely paralleling that of xeroderma pigmentosum.

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* Read before the Section on Dermatology and Syphilology, New York Academy of Medicine, Nov. 17, 1921.

For the practical student in this field, then, it is important to remember that overdosage with roentgen rays, according to its degree, will produce a simple picture of transitory erythema, mild atrophy, restricted or extensive necrosis, or one reminiscent of scleroderma, or, finally, of xeroderma.

DOSAGE

To prevent any of the foregoing disasters, sincere efforts have been made to determine the minimum quantity of radiation that will produce the maximum therapeutic effect. In the entire history of this subject, no one has done more to place roentgen-ray treatment of the skin on a firm, safe and intelligent foundation than MacKee. After Kienboeck had reestimated dosage by means of placing the Sabouraud pastil on the skin, instead of half way between the skin and the target, it was MacKee, working with modern apparatus, who elaborated a completely successful technic. At first, he did so by means of the Holzknecht radiometer, but later he was able to abandon this because it had been established that under known constant factors, namely, voltage, milliamperage, distance and time, definite quantities of roentgen rays could be applied.

It had been determined that from four to five of Holzknecht's units (4-5H) corresponded to the scalp depilating dose called Tint B on the Sabouraud scale. Since the intensity of the rays varies inversely as the square of the distance, it took four times as long to discolor the pastil placed on the skin, as by the half distance method. This was arbitrarily called the Holzknecht unit, skin distance (H.s.d.). As a result, the symbol 1 H in this country means four or five times the dose it represents abroad, and great confusion has been created. For all practical purposes, 1 H s.d. equals the erythema dose except on the scalp, where one and a quarter H s.d. are required to produce erythema. It would simplify matters to substitute the letter E. for H s.d., the E being an abbreviation for erythema. Since E might be an abbreviation for epilation as well, and since MacKee has been the greatest student of the subject under discussion, it seems that the symbol M should be adopted to represent the erythema dose, under the conditions included in the symbol 1 H s.d.

Thus one-quarter M would equal a fractional dose, 1 M a massive dose, etc., according to MacKee's terminology. It is a pity that MacKee used so many fanciful expressions in describing his dosage, instead of simply adhering to the numerical units of measure. The words hyperintensive, superintensive, intensive, fractional and the like, convey nothing uniform to different minds; whereas, the figures and symbols, which he uses synonymously, do. For this reason, it is to be hoped

that in the future, whether the symbol of the erythema dose remains 1 H s.d., 1 M, or 1 E, the gradations will be expressed numerically and not verbally.

From this article, the method of determining dosage, a discussion of the different types of apparatus, the various radiometers, and all kindred topics will be omitted, partly because of lack of space and partly because the subjects are all well known, and are so thoroughly discussed in MacKee's work that a recapitulation would be presumptuous.

THERAPEUTIC AIMS AND SCOPE

The object of this article is to outline what the roentgen rays may be expected to accomplish with different skin lesions, regarded from the standpoint of morbid anatomy and normal or abnormal cutaneous function. In addition, their therapeutic value from the purely mechanical standpoint will be discussed.

In general, a lesion may be considered the result of the response of tissue to a pathogenic agent to which it is peculiarly susceptible. Cures, except in the domain of surgery, are produced either by eliminating or by destroying the pathogenic agent, or by so altering tissue as to render it unable to respond to the pathogenic factor or factors. In the treatment of epithelioma, probably the former mechanism is illustrated, because of the destruction of the malignant cells themselves, or of the destruction, primarily, of the conditions which favor their growth. In acne, on the other hand, the second state of affairs is illustrated; for acne is a disease of puberty. By irradiation, the skin is so altered that it can no longer respond in that abnormal manner, clinically designated as acne; whereas, the underlying forces, assembled in the mechanism designated as puberty, persist until adult life. Crude as this illustration is, it nicely elucidates the points. The mechanical use of the roentgen rays is illustrated in the cure of ringworm of the scalp by epilation. Here, the falling of the hair, with the resultant mechanical removal of the fungi, produces the cure, not the effect of the roentgen rays on the fungi themselves.

It will not be possible in all types of lesions so precisely to indicate the effect of the roentgen rays as in the foregoing examples. The groups of conditions in which the roentgen rays are efficacious are simple inflammations, infections, noninfectious granulomas, dystrophies, benign new growths, malignant new growths and certain nevi. In short, some lesions in the entire range of dermatoses are amenable to the roentgen rays. The factors are unknown which determine the susceptibility of one lesion and the insusceptibility of its nearest relative to this mode of treatment, even though anatomically there may be only the slightest difference between the two. For example, some forms of tuberculosis

respond readily. Syphilis does not. Here the causative parasites are as wide asunder as the animal and vegetable kingdoms. But lepra does not either so far as we know, and the lepra bacillus and tubercle bacillus are remarkable for their similarity in appearance and staining properties. But further, not all forms of cutaneous tuberculosis respond equally readily. What determines these variations would be pure speculation if the answer were sought today.

As briefly as possibile, then, will be discussed the lesions that respond or do not respond to roentgen-ray treatment; the probable explanation of the phenomena, based on histology, and finally, in some instances, the best dosage for the given lesion. It is understood that the hypotheses advanced are merely tentative and that we are postulating no dogma, but will gladly welcome any evidence the future may unveil, either for or against our beliefs. The dosage will be given in terms of the letter M, following which will appear the symbol (H s.d.). It is hoped that this new symbol will find favor among Americans, partly in recognition of MacKee's work, and partly because it will remove confusion. It is further hoped that the views advanced will furnish a modest basis for an intelligent conception of roentgenotherapy of the skin.

GENERAL CONSIDERATIONS

It is not so important as one would imagine from the literature whether filtered or unfiltered rays are used, or whether several short or fewer long exposures are made. There are, of course, many specific instances in which this statement does not apply. But for the purposes of this article, the discussion involved would have to be too long. Thus, in subsequent paragraphs certain beliefs will be more or less arbitrarily stated. In general, however, not a single enthusiasm expressed by MacKee in his recent work, not a single one of his qualifications fails of corroboration in our experience. This indicates our views on the problems inherent in the foregoing.

We wish to disclaim the impression that we regard roentgenotherapy as the only way of treating disturbances of the skin. Today, however, it is undoubtedly the most important single method of managing such diseases. When the attempt to apply our gleanings from investigations in altered biochemistry or endocrine disbalance have failed to make a skin lesion disappear, roentgenotherapy often succeeds. It is admitted that our studies of the causation of skin diseases must continue and are of first importance; for no one claims that any other method of approach to the problem of curing disease is rational. But while our investigations proceed, and until they are fruitful, we must use the best available symptomatic methods for relieving the sick; and so far as the skin is concerned, as stated, roentgenotherapy affords the greatest possible hope.

As we particularize in the following paragraphs, in each condition discussed, when possible, its etiology will be given, its pathology, the volume of the lesion and the best method of administering irradiation, together with the prognosis under such treatment. Not every skin disease that has been successfully managed by the roentgen rays will be included. Unless there is a special reason, only the commoner ones will be mentioned.

SIMPLE INFLAMMATIONS

For want of a better term, under simple inflammations we classify those cutaneous catarrhal reactions of which the causation is unknown. The range of this group is from simple determatitis to lichen planus, and the primary and secondary lichenifications. The main groups to be discussed are simple dermatitis, implying eczema, the psoriasiform dermatoses and the lichens.

Dermatitis has so many causes that it is not astonishing that the condition, however constant in aspect, shows no uniform response to roentgenotherapy, any more than to any other form of treatment. In general, the disease is due to an interoperation between external and internal factors; but in spite of this the attempt to alter the reacting properties of the skin by means of the roentgen rays is not invariably successful. Pathologically, the condition is an exudative catarrh, acute, subacute or chronic. When the cause is known, as in dermatitis venenata, there is no object in using the roentgen rays, for the cure is obvious. In obscure cases, whether in the vesicular or in the scaling phase, the roentgen rays are valuable in doses of from one-eighth to one-quarter M (H s.d.), repeated at weekly intervals for from four to even ten exposures, with the normal surrounding skin screened. In extensive eruptions, different parts of the body should be irradiated on as many days as feasible without producing leukopenia; but the same area should not be exposed more than once a week. The lesions in question are superficial and in general show relatively slight alterations in the epidermis, edema, and not profound infiltration in the upper half of the corium. The dose mentioned is probably only sufficient to inhibit the tendency in the epidermis to hyperplasia, and to destroy the deeper inflammatory cells.

In the squamous form, the process is partly as outlined in the foregoing, but there is more marked hyperkeratosis and parakeratosis, with distinctly more fixed connective tissue cells in the infiltration, and hence the need for at least one quarter M per week to each area. Otherwise, the remarks in the preceding paragraphs also apply here.

In forms of dermatitis due to fungi, the radiation does very little good until after the organisms have been destroyed, although a slight degree of inhibition may be ascribed to the rays. In varieties due to

excessive secretion of the sweat glands, and in those whose basis is seborrhea, the rays are of value in their effect on the lesions and in their inhibitory effect on gland function. In cases of undetermined etiology, the rays sometimes work and sometimes do not; but it is difficult to forecast the result. It is equally difficult always to state what the expectancy of success is; but in the vast majority of cases the lesions disappear and remain away for a variable period, in a striking number, apparently permanently. When they have disappeared, they return only either when the effect of the rays on the skin has worn off, or when, because of the interruption of general treatment, the original conditions determining the disease have been reestablished.

Other vesicular and bullous diseases do not respond encouragingly to the rays, although there are reports of cures of simple herpes in the literature.

PSORIASIFORM DERMATOSES

The type of this group is psoriasis. The cause of the disease is unknown. It is obviously due either to a metabolic disturbance or to an external infection. The lesions vary in size and shape, and under the microscope show distinct changes in the epidermis and corium. A psoriasis lesion may be from 1 millimeter to three eighths of an inch thick, and the latter is covered by a dense scale of hyperkeratotic and parakeratotic tissue. There are numerous mitoses. The infiltration consists mainly of small round cells of the lymphatic type, with a variable number of fibroblasts. The object of roentgen-ray treatment is to inhibit epidermal hyperplasia and promote resorption of the inflammatory deposit. The rationale of this is a direct attack on the multiplying cells of the rete and small round cells in the infiltration, which, probably by analogy with lymphocytes, are vulnerable to the rays. The main technical difficulty lies in the fact that the scale acts as a screen in direct ratio to its thickness. The majority of lesions disappear under intelligent treatment. Some are inexplicably obstinate and, if unresponsive after six exposures, the attempt to remove them by means of roentgen rays should cease. The management is precisely as in the squamous form of dermatitis. Acute early attacks are unfavorable for the roentgen rays. Coincident with irradiation, general treatment should be pressed, but local irritating applications are contraindicated.

Related dermatoses vary in their response. Seborrhea does particularly well. Parapsoriasis, which is not as intense a process by one-twentieth as psoriasis, does not respond at all. No one can explain the reasons. Properly employed, the roentgen rays may be used in psoriasis and seborrhea of the scalp, but for not more than from four to six weekly exposures of one quarter M (H s.d.), employed by the

regional method used in scalp epilation; epilation should never be produced. Obviously psoriasis recurs, although we have one case on record in which there was no relapse after seven years.

LICHENS AND LICHENIFICATION

Lesions in this group are characterized by profound infiltrations and marked epidermal changes. In lichen planus, the epidermal changes are relatively less intense than in lichenification, although the infiltrations are equally voluminous in the two groups. In acute lichen planus and in many of the chronic subvarieties, roentgen-ray therapy appears to be almost a specific, both as to the disappearance of the lesions and as to the control of itching. The infiltrating cells resemble lymphocytes, admixed with melanoblasts. The latter persist long after the papules have clinically disappeared, and the roentgen rays have no influence on the remaining pigmentation. The treatment is carried out as in universal psoriasis, or, for restricted lesions, one quarter M (H s.d.) is given weekly, although in hypertrophic forms higher doses must be employed. In nearly all generalized cases the patients recover more rapidly under this treatment than under any other, and at least 75 per cent. of the other types of lichen planus respond. When the mouth is involved, of course, the use of roentgen rays is inconvenient.

In lichenification, whether primary or secondary, small doses of roentgen rays cure three quarters of the cases, except when an underlying dermatosis not amenable to the roentgen rays exists. Under these circumstances, the main consideration is to eliminate the underlying state.

None of the other conditions bearing the name lichen seem amenable to the rays.

PRURIGO

Prurigo is probably papular urticaria. At times, it responds well to small repeated doses of roentgen rays. The lesions consist of infiltrations of round cells, below an epidermis which is slightly vesicular. The disease is metabolic, and the skin is not capable of change under the roentgen rays sufficient to render it irresponsive to the internal disturbance. The lesions disappear rapidly enough in favorable instances, but recur. There is a transient influence but nothing definite. Obviously, the agent would not be employed in the erythema and urticaria groups related to prurigo. Not even in erythema nodosum would there be any indication for its employment.

INFECTIONS

The roentgen rays are apparently of no use in skin diseases caused by animal parasites of any variety. Neither are they of value in super-

ficial, bacterial or fungus infections. In fact, there seems to be no disease primarily due to pus cocci in which the use of roentgen rays has been successful. In acne, in which the pustulation is incidental, the roentgen rays are effective because they stop the formation of comedones. In ordinary sycosis, as well as in that due to fungi, the value of the roentgen rays resides in the removal of the germs by producing falling of the affected hairs. On the other hand, in bacillary diseases and even in those due to fungi, the roentgen rays are of great value when the lesions are granulomas, the one notable exception being lepra. Syphilis is not included because it is due to a protozoon, and in this condition there would be no particular reason for using the roentgen rays.

Infections Due to Cocci—Nonparasitic sycosis is treated by a depilatory dose and the cure is due to falling of the affected hairs. Acne is not essentially a pus disease. It is a manifestation of puberty, and is the result of follicular hyperkeratosis and overactivity of the sebaceous glands. If the functional disturbance can be controlled and the hyperkeratosis stopped, abscess formation will automatically cease. This can be accomplished by the roentgen rays, administered according to the MacKee technic, in at least 95 per cent. of all patients. In this article, acne has again been mentioned at this point, because its striking clinical feature is the presence of pustules. In general, pyodermas are not affected by the roentgen rays.

Infections Caused by Bacilli.—Lupus vulgaris, tuberculosis verrucosa cutis and many other forms of tuberculosis of the skin will disappear under from one to three irradiations of 1 M (H s.d.) at intervals of four weeks. The result is possibly due to some effect on the micro-organisms, but probably the correct explanation is that the granuloma is absorbed through the direct influence of the rays on the inflammatory cells.

Except in erythema induratum, the tuberculids are not often influenced by the roentgen rays. This is difficult to explain, for nearly all of this group of lesions are small granulomas. Erythema induratum yields to one quarter M (H s.d.) applied weekly, or larger doses applied at longer intervals. In England, lupus erythematosus is treated by this means. We have not attempted to verify the reports by test, because lupus erythematosus microscopically shows dilatation of the vessels and destruction of the elastic tissue, and ends in atrophy. Since these effects can all be produced by the roentgen rays, their use in this disease seems unsound. Next to the Finsen lamp, the roentgen rays afford the greatest promise in skin tuberculosis.

Why they are not effective in lepra, or whether not enough studies have been made, cannot be stated; nor have we any personal experience with sarcoid. In rhinoscleroma, the roentgen rays are invaluable, but we cannot speak from personal experience.

Fungus Infections.—In sporotrichosis, blastomycosis and actinomycosis, the roentgen rays are almost a specific, unless the systemic involvement is too great; and, even in this event, the lesions themselves often may be caused to disappear. The treatment is carried out as in tuberculosis. Resorption of the lesions is evidently due to the direct effect of the rays on the infiltrating cells.

In ringworm of the scalp, with and without kerion, and in favus, the value of the rays lies in their depilating action, when properly administered by the Kienboeck-Adamson method, with the MacKee system of dosage. This, perhaps, constitutes the only rational treatment for these diseases. In ringworm of the nails, in which the rays are often valuable, the way in which they work is not understood.

NONINFECTIOUS GRANULOMAS

This group of conditions includes mycosis, leukemia and Hodgkin's disease. The relation of these conditions to lymphosarcoma is not clearly understood; but the fact remains that their lesions are highly responsive to roentgen rays administered in doses of from one-half to three-quarters M (H s.d.), or even slightly more, at suitable intervals. To all intents and purposes, the lesions are new growths, and are probably subject to the laws governing the effect of roentgen rays on young growing cells. Of course, treating the skin lesions successfully does not cure the disease, but merely temporarily removes its manifestations. No other method of attack affords so much promise, so far as symptomatic therapy is concerned.

NEW GROWTHS

In new growths, the roentgen rays are inconsistent in action. They are far more effective in malignant than in benign types. In benign connective tissue neoplasms, except at times in keloids, they are useless. In benign epithelial growths, except in the ordinary wart, of which about 60 per cent. are responsive, they are likewise useless, unless plantar warts are included. In malignant neoplasms, whether sarcoma or epithelioma, the roentgen rays are of extraordinary value. The majority of such lesions will disappear after one irradiation with from one and one-half to two M (H s.d.). Often further treatment is required, but it is not within the province of this article to enter into technical details. Nowhere is the value of roentgen-ray therapy better illustrated than in this field. The relative merits of roentgen rays and

radium are not part of the subject under discussion, so they will not be mentioned. Nor do we wish to champion the roentgen rays to the exclusion of other recognized methods of treatment. To consummate a victory in battle, all forces are employed; and, in the war on malignant new growths, the roentgen rays constitute a valuable force. The attack is a direct one on the malignant cells, which, being young and rapidly reproductive, are far more vulnerable than the maturer, less rapidly growing cells of benign neoplasms.

Nevi, which might well be included under neoplasms, since they are growths due to intra-uterine anomalies, whether evidenced at birth or in later life, are so rarely amenable to roentgen-ray treatment as to require no discussion in this brief article. On the whole, they are highly organized and rather mature lesions. Some of them are capable of giving rise to malignancy, and if this occurs, the resultant growth can often be successfully treated by the roentgen rays.

The so-called precancerous dermatosis, xeroderma pigmentosum, Paget's disease, leukoplakia and roentgen-ray keratoses themselves, will not be discussed.

DYSTROPHIES

Dystrophies may be atrophies or hypertrophies. Obviously, atrophies afford none of the conditions under which the roentgen rays could be efficacious. Hypertrophies, except those mechanically produced by irritation, also are no particularly fruitful field for roentgen-ray therapy. Icthyosis, keratosis of the hair follicles, possibly Darier's disease and acanthosis nigricans, do not seem to respond often to the roentgen rays. Occasional favorable reports creep into the literature, but in our experience only follicular keratoses seem at all amenable. Some inflammatory hypertrophies, not properly belonging to this group, and perhaps better regarded as hyperplasias, respond with a certain degree of uniformity to the roentgen rays. These are clavus and callus, including the plantar wart. In a preponderance of cases, from two to five irradiations of 1 M (H s.d), at intervals of four weeks, will cause the lesions to disappear, if the underlying mechanical irritation is likewise removed.

FUNCTIONAL DISEASES: PRURITUS

Excessive function of skin glands is controllable by the roentgen rays under conditions mentioned in connection with acne. Hirsutes does not properly belong here, and the attempt to produce permanent alopecia by means of the roentgen rays is mentioned only to be condemned.

Pruritus, particularly of the vulva and anus, is amenable to small doses of the roentgen rays at frequent intervals, or larger doses at less

frequent intervals, the maximum at each exposure, however, being one-half M (H s.d.). Three quarters of these cases can thus be cured, or at least relieved.

CONCLUSIONS

1. The therapeutic use of the roentgen rays covers a wide territory. All other methods of internal and external management should be pursued at the same time. What stands out most clearly is that voluminous infiltrations, whether neoplastic or inflammatory, and whether accompanied by epidermal changes or not, are most amenable. In addition to this, diseases depending on functional or productive overactivity, such as acne, are equally amenable. Further, the roentgen rays are of equal use in producing the mechanical removal of infected hair.

2. Neoplasms, including the noninfectious granulomas, are favorably affected through the influence of the rays on young, rapidly multiplying cells.

3. Acne is cured by an alteration of the skin through the inhibition of gland function, and of the reproductive ability of the follicular epidermis.

4. The infectious granulomas are cured partly through the mechanism outlined in connection with neoplasms, and possibly because the causative organisms themselves are slightly affected.

5. The simple inflammatory lesions are curable only when there is hyperplasia of the epidermis and a marked infiltration. The former is influenced by the inhibiting effect of the rays on the reproducing cells, and the latter by the destructive effect on the infiltrating cells, which are mainly of the lymphatic type, as well as on the reproducing fibroblasts.

6. Why the rays favorably influence pruritus is not known.

7. By understanding the type and volume of lesions and by realizing that conditions in themselves atrophic are unfavorable for roentgen-ray treatment, it can be determined, from an understanding of the simple histopathology of skin lesions, what the dose and what the intervals should be.

8. Without this knowledge, the use of roentgen rays is a purely arbitrary and mechanical procedure.

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CARCINOMA OF THE TONGUE AND ITS TREATMENT WITH RADIUM*

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Cancer of the tongue is most often seen between the fourth and sixth decades and is much more common in men than in women. It occurs most frequently on the side of the tongue, but may occur any place. Pathologically, it is practically always of the squamous cell type of carcinoma. Among the etiologic factors, syphilis, and trauma produced by rough teeth and by the use of tobacco are of prime importance.

The variation in the reports of the frequency of syphilis in carcinoma of the tongue, (3.38 per cent., according to Meller, to 84.23 per cent., according to Fournier), is probably in proportion to the incidence of syphilis in the clinics from which the statistics are taken. It is certainly true that a syphilitic lesion may be a precancerous lesion. A gumma, leukoplakia, or chronic syphilitic glossitis may be the starting point of cancer, though the determining factor may be obscure. This determining factor is undoubtedly often a matter of time or of trauma, or of both. An untreated syphilitic lesion of the tongue should always be watched with suspicion, especially when subjected to the trauma of the excessive use of tobacco or of a rough tooth. In the nonsyphilitic patient, cancer may apparently be caused by the use of tobacco in any form. Also, in the nonsyphilitic, carcinoma may develop in a chronic ulcer caused by an untreated rough tooth. Nevertheless, cancer of the tongue does appear with startling frequency in nonsyphilitic nonsmokers, without the presence of a rough tooth. In addition to these factors, there is probably an inherent tendency toward cancer formation which is, after all, the chief factor. The recognition and proper treatment of syphilis of the mouth, and proper dentistry, will undoubtedly lessen the frequency of cancer of the tongue.

Leukoplakia should be treated by stopping smoking, by specific treatment if indicated, and by the use of a mouth wash, such as sodium thiosulphate (hyposulphite). If these measures fail, radium should be applied. It is usually curative and is far more satisfactory than surgery or cauterization. The treatment of a chronic ulcer, due to a smoker's burn or the irritation of a ragged tooth, is the removal of the apparent

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cause, and, if this is not sufficient, surgery, cauterization with the actual cautery, electrocoagulation or the galvanic cautery, or radiation, should be invoked.

The diagnosis of carcinoma of the tongue is frequently difficult. It is often impossible to differentiate positively syphilis, tuberculous ulcer and carcinoma, clinically. As a rule, the syphilitic lesion is not so hard as carcinoma, develops more rapidly, and occurs most frequently on the dorsum of the tongue, while carcinoma is most common on the sides. These criteria are, however, not final. The blood Wasserman test should be made in every case and, though it is negative, a therapeutic test consisting of two or more arsphenamin injections should be given, if there is still some doubt. The Wassermann reaction here, as elsewhere, should be regarded as only one piece of evidence. Even the therapeutic test may be misinterpreted at first, because we often see syphilis and carcinoma in the same lesion, with the result that the lesion clears rapidly for a time under antisyphilitic medication, giving us a false sense of security. Tuberculous ulcers simulating broken down gummas, though rare, may be found on any portion of the tongue and are usually seen in persons with chronic tuberculosis. Although these tuberculous lesions are usually irregular, undermined and soft, it is occasionally impossible to make a positive clinical diagnosis, and a biopsy, as well as therapeutic tests, should be resorted to. There is still much controversy as to the danger of doing a biopsy, but probably little damage is done if the specimen is obtained from near the center of the lesion, with a minimum of trauma. The advantages of having made an absolutely positive diagnosis before instituting treatment of any kind are obvious.

The surgical treatment of carcinoma of the tongue has been the accepted form of therapy. As in surgical treatment of cancer elsewhere, it is necessary to remove the lesion with a very wide margin. Even in the earliest cases, the most conservative operation finding favor with the surgeons is hemisection. In the more extensive cases, complete amputation of the tongue is done, often with the removal of the floor of the mouth. These operations are not only terribly mutilating, but also carry with them a high mortality, even in the most skilled hands, and are productive of but few cures.

During the past few years, a number of physicians have treated cancer of the tongue by electric coagulation, usually in conjunction with radiotherapy. In capable hands, the results are frequently satisfactory.

The treatment of carcinoma of the tongue with radium has many advantages. In the first place, there is no primary mortality. In contrast to this, we see a primary mortality in the surgical treatment varying from 10 per cent. to 30 per cent., depending on the extent of the lesion. Secondary death, due to hemorrhage or infection, is far less common

after radium than after surgery. A palliative result can be obtained in a majority of the cases with radium treatment; while, even if the patient survives the operative procedure, he is left with greatly impeded speech and is able to eat only with great difficulty and there is frequently increased rapidity of growth. It is not possible at this time to estimate the percentage of cures by radium, because the method has not been in use long enough and because the majority of the cases which we are now seeing are the ones that the surgeons consider hopeless. The percentage of cures for surgery is less than 20 per cent., even in picked cases. The great disadvantage of radium in these cases is the painful reaction. It is impossible to estimate the severity of this in advance. In some of our cases, the period of reaction was not long and the healing of the ulcer and softening of the lesion were prompt. In others, the amount of suffering was out of all proportion to the extent of the lesion and the clinical appearance of the reaction. We have not as yet been able to devise a satisfactory way of combating the reaction.

The ideal method of treating these cases is by the insertion of the tiny unscreened tubes of radium emanation. This method has been described and was first used by Janeway and Quick of the Memorial Hospital of New York City. At present, we feel that it is best to give the entire dose at one sitting and attempt to seed the entire indurated area with the tiny emanation tubes, each containing about 1 millicurie, inserting from five to ten or more tubes depending on the size of the lesion. This gives an even, intense radiation throughout the tumor mass. In inserting the tubes, we attempt to keep them within the carcinomatous tissue and do not intentionally place any of them in the surrounding normal tissues. In addition, we sometimes crossfire from the surface by using a radium plaque or an applicator of a number of tubes.

The reaction occurs a little earlier following the use of buried bare tubes of emanation than following the surface application of radium. It starts as a rule in about seven days, is usually at its height in from two to three weeks, and then gradually diminishes. This reaction consists of an increase in the swelling, with burning pain, and often an increase in the size of the lesion due to ulceration following the separation of the slough. A reaction on portions of the mouth adjacent to the area treated is a constant and often painful and unpleasant feature. In favorable cases, after the height of the reaction has been reached, the lesion softens rapidly and then heals slowly. Most of the patients complain of pain radiating to the ear. This is sometimes of long duration, frequently outlasting the period of visible reaction. Probably the next best method to that of burying bare tubes of emanation is the insertion of steel needles, containing radium element, into the tumor mass. The number of these and the time of exposure depend on the strength of

the needles and the size of the lesion. This method probably causes more tissue destruction than does the bare tube method and does not give as intensive a local radiation. The use of surface applications of tubes or plaques alone is certainly the least satisfactory form of therapy and can be expected to give no more than palliative results, except in the most superficial cases.

At the same time that the tongue lesion is treated, the cervical glands should receive a massive dose of roentgen ray, covering three areas, the front and the two sides. If there are palpable glands that are clinically malignant, these should be removed about two weeks after radiation, if they are operable. If they do not appear to be operable, bare tubes may be buried in them at the time of a partial operation, or inserted through the skin under a local anesthetic. If no glands are palpable, the patient should receive two or three courses of roentgen-ray therapy and be kept under close observation for as long as possible. Should glands develop under treatment, they should be operated on at once, and the roentgen-ray treatment continued after operation. During operation, bare tubes can be buried in any suspicious place. The technic of the roentgen-ray treatment is constantly being changed. During the last year, we have increased the distance and the screening considerably, and we are apparently getting better results. We have practically entirely given up the use of the radium pack to the neck in these cases as uneconomical and no more effective than the roentgen ray. It is probable that the newer deep therapy machines will still further improve our results.

During the last two and a half years, we have treated fourteen patients with carcinoma of the tongue, including two that were first treated just prior to the installation of the emanation plant at the University of California Hospital. Two of the patients were women. The ages varied from 36 to 93 years. Four had syphilis in addition to carcinoma. Four are clinically free of the disease, two at two years after treatment, one at one and a half years and one at six months. Five showed cervical metastases at the time treatment was instituted and five of the others developed an involvement of the glands during treatment. None of these patients survived. Ten are dead, or when last seen were in such condition that the end was only a matter of time. Several other patients received their first treatment but did not again report for observation or further treatment, and were not traced. It is possible that all our patients clinically cured will not remain well, but we have the satisfaction of having prolonged life without mutilation. It is reasonable to expect that with improved technic it will be possible to cure 25 per cent. of unselected cases of carcinoma of the tongue by radiation.

CANCER OF THE LIP TREATED BY ELECTRO-COAGULATION AND RADIATION *

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In the latest stages of cancer of the lip, neither radiation, electrocoagulation, nor any other form of treatment can be expected to cure the patient. Therefore, to cure cancer of the lip, as in any other form of cancer, it should be treated early and thoroughly. Thorough treatment of cancer of the lip means radiation, no matter what other form of treatment may be used in combination. I believe that a patient suffering with cancer of the lip does not get all possible chances of recovery unless radiation is given. Whether radiation should be used alone or combined with other treatment is a matter of careful judgment in the individual case. As a prophylactic measure, every point of irritation affecting the lip should be removed, such as irritation from a pipe, cigaret paper, excessive cigar smoking, traumatism, irritation from a jagged tooth, or excessive exposure to heat, cold and wind. Any fissure or crust formation on the lip that lasts for four weeks without complete healing should be looked on with suspicion. Practically every one of these lesions, especially if there is associated any induration at the base, is potentially malignant, if not actually so, unless due to syphilis. If patients are thoroughly treated in these early stages, practically all should get well.

RESULTS OF TREATMENT

I will review only the cases treated in my private clinic, because of the difficulties in tracing the patients in the hospital clinics. Many patients have been treated in the roentgen-ray departments of the hospitals. Most of these were postoperative or recurrent cases, and, in many instances, the patients did not consider themselves our patients, or looked on the postoperative treatment as an unnecessary annoyance, and often prematurely discontinued treatment. The recurrent cases were generally far advanced, and were referred to the department because there was nothing else to do. They were usually hopeless cases.

The early cases will, of course, give the best results, and, if treated thoroughly, all patients should get well. My records do not show that all do get well, but in the cases in which we failed the patients were difficult to manage. One had an associated syphilitic infection. He developed an extension in the cheek and jaw after seven years, and

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died during this stage, from pneumonia. It was always doubtful whether this induration about the angle of the jaw, but above the lower edge of the bone, was syphilitic or malignant, and he would not permit a section to be removed for microscopic examination. In another case in which we failed, the patient did not return after the first treatment. The third failure, I believe was due to insufficient treatment at the very beginning. While there was no local recurrence, an indurated ridge developed at the inner border of the original lesion and extended downward and outward toward the right submaxillary gland. The side of the cheek from the angle of the mouth to the submaxillary gland became indurated and undoubtedly malignant. The patient became discouraged; but at the time of the last visit the submaxillary gland was not palpable. It seems that the treatment given to the submaxillary region was efficacious.

In another case, eighteen months after the primary lesion had disappeared a metastatic lymph node developed in the submaxillary region. In looking about for the cause of this surprising fact, we found that, through some mistake in the office, he had not received treatment over these areas. While it is unfortunate for the man, it illustrates beautifully the importance of thorough treatment of the lymphatic areas by radiation, either with the roentgen rays or radium, at the time of beginning treatment of the primary lesion, and subsequently sufficient to insure thorough destruction of the cancer cells. This recurrent lymphnode has since been treated, apparently with success, by the insertion of radium needles.

In my private clinic, we have treated 105 cases of cancer of the lip: primary eighty, recurrent twenty, postoperative five. In eighty primary cases from my private records, seventy-four patients recovered, and have remained well from several months to eighteen years. Two died of a continuation of the disease, two have had a recurrence and in two the result is unknown.

I realize that such a record is not beyond criticism, because the duration of the results is variable, and other failures may have to be recorded. However, since the results obtained by my colleagues, Henry K. Pancoast and William L. Clark, correspond so closely to my own, and were obtained by similar technic, and since the results in the older cases are most satisfactory, I am led to believe that our enthusiasm is justified and that this method of treatment can be recommended.

The recurrent conditions are always more difficult to cure. In the twenty recurrent cases treated, only eight patients recovered. Much will depend on the promptness and thoroughness with which these patients are treated; but, in part at least, the results will depend on the nature of the cancer or the degree of malignancy. One must obtain prompt results from radiation or failure is likely to result. Thorough

radiation by the roentgen rays, and by radium when it can be combined to advantage, from the very beginning is most important. I never like to have a patient referred to me after some one has used insufficient radiation over a considerable period of time, and then, having recognized failure, has concluded that perhaps more thorough radiation may produce good results. In such cases, unless the lesion is so situated that it can be destroyed by electrocoagulation, failure will be the rule.

The five patients given postoperative treatment have remained well, though in none was there a block dissection.

TECHNIC

In the treatment of malignant disease, probably more than in any other field, skill and keen judgment are required. One must understand the nature of the disease and its lines of distribution. One must then use enough radiation to destroy the cancer cells and at the same time do as little damage to healthy tissues as is possible. Boggs [1] says, "Too many failures have been accredited to radium, when, as a matter of fact, through inexperience and lack of proper study, only partial doses were given."

Electrocoagulation.—Electrocoagulation consists in the coagulation of the diseased areas by means of the heat produced by the high frequency current as it passes through the body from a point attached either to the Oudin current or to one pole of the d'Arsonval current. The Oudin current (unipolar) is used for small lesions, and the d'Arsonval current is used for the larger lesions. If the d'Arsonval current is used, one pole is attached to a pad or smooth metal electrode placed under the buttocks of the patient, while the active electrode is a point. This current is not selective in its action, but will destroy the tissues radiating outward from the point. One cannot use this current, therefore, in locations in which essential structures, such as important blood vessels or nerves, are located in the line of destruction. There will be a zone beyond the actual coagulation which will be superheated and will be sufficient to destroy cancer cells, but will not destroy the healthy tissue. In this way, one conserves tissue; and, as is shown by my own cases and by those shown by Clark,[2] the defect after the patient is well does not nearly equal the amount of diseased tissue removed. There is, apparently, a regeneration of a part of the tissue removed. The heat is generated in the tissues. It is the penetrative value of this form of heat that makes it more desirable than that obtained

1. Boggs, R. H.: Radium Treatment of Mouth and Throat, Pennsylvania M. J. **25**:22 (Oct.) 1921.

2. Clark, W. L.: Cancer of the Oral Cavity, Jaws and Throat, J. A. M. A. **26**:1365-1369 (Oct. 26) 1918.

by the thermocautery, which destroys only by transmitted heat and, therefore, is essentially more superficial. The destructive value of the current used can be learned only by experience, but experience can be obtained by practice with a piece of liver, or other meat. Such experience from practice with a piece of liver cannot be directly transferred, for the current value will vary with the shape of the lesion to be destroyed, whether small and prominent, such as a wart or mole, or flat and indefinitely outlined, as in carcinoma. The current value will also vary with the size of the mass or body to which the tissue to be destroyed is attached. The milliamperemeter is not of great value in judging the effects.

The tissue as it is destroyed by the high frequency current turns white, if it is coagulated; or is dried up, if small, and sparked through the air. (Desiccation.)

Selection of cases suitable for electrocoagulation is necessary. If the lesion is small, and its removal will not cause too serious a defect in the lip, I believe that such destruction will be followed by more prompt and more satisfactory results than by radiation alone. By such destruction, we macroscopically remove the diseased tissue just as the surgeon does with the knife, but we do it without opening any blood vessels or lymph channels. If the lesion is fairly large, I trim the destroyed tissue away with curved scissors, always carefully cutting within the destroyed area. In this way, one eliminates part of the disagreeable odor which accompanies the sloughing process.

If the cancer involves the entire lip, or even half of the lip, such preliminary destruction by electrocoagulation is impractical, unless one can foresee some means of closing the mouth by a subsequent plastic operation. If such a subsequent plastic operation is planned, the surgeon who is to perform the operation should see the patient and be consulted in advance, before the radiologist attempts the destruction. We have no more right to assume in advance what the surgeon's judgment and procedure will be than the surgeon has a right to assume what the judgment and procedure of the radiologist will be. Both specialties are developing too rapidly for either to take up the other as a side issue, and more will be accomplished by cooperation.

Generally speaking, I believe that, in these advanced primary cases, a thorough trial should be made first with applications of radium, and if it is skilfully applied, good results may be expected. In some cases, marked temporary improvement only may occur, and a stage is then reached in which the disease is at a standstill or may begin to progress in spite of radiation. At this stage, complete and thorough local destruction or complete surgical excision is probably the only procedure left. With the cooperation of skilful surgeons, I have had success in some such advanced cases.

RADIATION

Radiation is indicated in all cancers of the lip, no matter what other treatment is used, and sufficient radiation must be used actually to destroy the cancer cells. If a patient is to be operated on surgically, a preliminary radiation with a full erythema dose should be given over the lip and chin, and in the submental and submaxillary regions; and, after the operation, and two to three weeks after the preliminary treatment, similar radiation should be given. The patient should then be kept under observation for several years, and more radiation should be applied if there is the slightest sign of recurrence. This same sort of radiation should be added to electrocoagulation, and can be applied most practically by means of the roentgen rays. For this purpose, I use a 9-inch spark gap, with five milliamperes of current, through 6 mm. of aluminum filter, at a distance of 30 cm. for twenty-five minutes. The time must be governed by the radiation value of the individual instrument used.

If one possesses sufficient radium and sufficient skill in its use, most and perhaps all local cancers of the lip can be cured by this means. It will require more time, more skill, more patience than by the combination of electrocoagulation and radiation, but there will be more preservation of tissue and a better cosmetic result than can be obtained by any combination with surgery or electrocoagulation. Therefore, I can lay down no rule for the treatment of all cases. The circumstances surrounding the individual case should govern our procedure.

If radium is to be used for the local destruction of the cancer with preservation of the tissue, the local tissues must be kept saturated to the limit of toleration of the normal structures until the cancer entirely disappears.

If one has sufficient radium, the submaxillary regions can be treated by surface applications, properly screened.

If metastatic nodules are palpable, they should have preliminary radiation as described, and should then be dissected out surgically, or treated by the insertion of radium needles sufficient to destroy the disease.

Radium needles of 10 mg. each may be inserted, 1 cm. apart, throughout the diseased area, and left in place for eight hours. Following the insertion of radium needles into tissues, there is the production of fibrous nodules, especially when the needles are placed farther apart, and left in place sixteen hours. These nodules are composed of fibrous tissue and result from the necroses produced by the radium. They will lead the untrained to suspect malignant nodules or redevelopment of the disease. With our meager knowledge on this point, it will require considerable skill to be able to distinguish between the disease

and the fibrous tissue. Therefore, I urge close observation, lest a false security lead to neglect of true malignant disease.

CONCLUSIONS

1. Any fissure or crust on the lip which lasts over a month should lead to suspicion of malignancy.

2. Local destruction by electrocoagulation, followed by thorough radiation, should effect a cure in practically all cases if patients are treated early.

3. Thorough radiation by radium or the roentgen rays should be given over the lymphatics draining the diseased area.

4. Recurrent carcinoma gives much less satisfactory results.

5. Metastatic lymph nodes should be treated by surface radiation and then by radium implantation or by excision.

TREATMENT OF CANCER OF THE LIP BY RADIATION *

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At the meeting of this Association in New Orleans, 1920, I presented a paper before this Section,[1] "A Clinical Study of Epithelioma of the Lower Lip," in which I considered more especially the pathologic anatomy and clinical classification of epithelioma of the lower lip, as observed and recorded in the private practice of my associate, Dr. M. M. Roland, and myself. In this paper, I mentioned only briefly the technic of treatment and results. Today, I am presenting to you briefly our technic of treatment by roentgen ray and radium of 248 consecutive cases of cancer of the lip which have occurred in our private practice from Jan. 1, 1909, to Dec. 31, 1921.

Tracing by letter of inquiry to family physician or patient, or by other methods, the present condition of each patient or the cause of death, and correlating the facts from such a number of patients with cancer of the lips who have been treated is no small undertaking, as those who have had experience will testify.

Also, I shall repeat these diagnoses have been made largely from a clinical rather than a biopsy examination. Judging from statistics from the Mayo Clinic, as given by Broders,[2] and from the laboratories of Bloodgood, as quoted by Hazen,[3] not less than 96 per cent. of our cases were of the prickle or of the squamous cell variety.

This total does not include a smaller number of cases in which the patients have been treated by interns or nurses in the Oklahoma State University, and in other hospitals of our city in which our services were only of a supervisory nature. This review of patients treated includes a goodly number who were treated several years prior to that enduring work toward arithmetical computation of roentgen-ray

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* Read before the Section on Dermatology and Syphilology at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

1. Lain, E. S.: A Clinical Study of Epithelioma of the Lower Lip, J. A. M. A. **75**:1052-1055 (Oct. 16) 1920.

2. Broders, A. C.: Basal Cell Epithelioma, 1912 Mayo Clinic Reprint, read before Southern Minnesota Medical Association, Mankato, Jan. 20, 1919.

3. Hazen, H. H.: Prickle Cell and Basal Cell Skin Cancers, J. A. M. A. **64**: 958 (March 20) 1915.

technic which was done by MacKee,[4] Shearer and their co-workers. Also, much of our radium treatment covers a period antedating the more accurate methods of screening or filtering in order to get the effects of the more penetrating gamma rays.

Since about 1915, we have classified our patients into three groups, according to the location of the lesion upon the lip, and the degree of development, which to us also largely indicates the prognosis. This classification was presented in full in my former paper, and I shall repeat only briefly:

Group 1: Those lesions which are situated wholly on the cutaneous border of the lip, are not deeply indurated and are without palpable or other evidence of metastasis in adjacent glands.

Group 2: Those in which the lesion most commonly also overlaps the mucosa of the lip and are deeply indurated, and in which the adjacent submental or submaxillary glands are palpable. This group also includes a few cases of recurrences from former attempts at a cure by caustic applications or unsuccessful surgery.

Group 3: Those of obvious metastasis in more than immediately adjacent glands. Approximately, this entire group is composed of patients who have previously tried repeatedly some other methods of treatment and whose conditions are now hopeless so far as a final cure is concerned.

Medical literature on radiotherapy of cancer is becoming so voluminous and laboratory examination of radiated tissue has so frequently verified the following statements that they have become axioms to the experienced radiotherapist and are no longer debatable.

1. Immature and rapidly growing cells are more sensitive to radiations than those which have acquired their adult physiologic character. This is known as the law of Bergonie and Tribondeau. This change is more noticeable after radiations from the hard beta or the gamma rays of radium than after hard roentgen rays.

2. The most susceptible period in the life of this cell is the time of its division, when its nuclear life appears more amenable and accessable to this energy.

3. All types or characters of cells are not equally affected by the same degree or length of radiation, squamous or prickle cells and certain types of connective tissue cells requiring the greatest, basal lymphoidal and endothelic the least.

4. The lethal dose for a certain type of cell, such as the basal, may be only sufficient to stimulate to a more rapid growth a squamous or a connective tissue cell.

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4. MacKee, G. M.: X-Ray and Radium in the Treatment of Diseases of the Skin, Philadelphia, Lea & Febiger, 1921, p. 134.

5. The shorter the waves of energy given off from radium or a roentgen-ray tube, the more penetrating and therefore the more effective are they in the disintegration of the cancer cell.

The more recent conjoined study of the physicist and radiotherapist has given to us a more accurate and scientific method of screening the rays so that roentgen rays and radium are now achieving cures in many cases of cancer formerly classified as inoperable or hopeless.

In the treatment of our cases, we have followed no invariable routine, except as regards certain proved or unquestioned procedures. One of the latter is the radiation of the submental and submaxillary glands by hard or gamma rays in all our cases of cancer of the lower lip.

Fig. 1 (Class 1).—Cancer of lip.

The treatment of metastasizing areas has, in most cases, been given by roentgen ray, using M. A. of from 3 to 5, spark gap of from 6 to 10 inches (15 to 25 cm.), anode distance of from 8 to 18 inches (20 to 45 cm.) with filters from 1 to 4 mm. of aluminum. Later, we added from 0.25 to 0.5 mm. of copper, giving a time of twenty minutes to one hour each position. During the past two or three years, we have been giving a dosage to glands, expressed in modern terms, a K.V. 100, M.A. 5, focal distance from 16 to 18 inches (40 to 45 cm.), time from twenty-five to forty-five minutes, repeated as indicated in six weeks.

This variation in technic does not appear so inconsistent when I explain that our evolution in treatment has consisted of an increasing potentiality over a period of fourteen years. Considering the cycle-like development of the pathologic cells, and reviewing our total treatments as well as the opinions and statistics of others, we are fully convinced that two or three properly timed and filtered doses of radium applied within intervals of a few days are more destructive to any type of cancer cell than the total given at a single exposure. The so-called fractional dosage, with either roentgen ray or radium, is much to be feared, although it is more successful if a nearly lethal instead of a stimulating dose for the pathologic cell has each time been given.

Fig. 2 (Class 1).—Patient shown in Figure 1, three years later.

Perhaps all radium specialists may not agree with our conclusions; still we have by experience been fully convinced that the destruction of a certain class of early and externally located basal cell cancers on the lips or elsewhere on the body may be more rapidly accomplished, and without an objectionable scar, by the use of the combined hard beta and gamma rays than by the gamma rays alone.

In a certain type of case under Group 1, in which there is a proliferating keratotic elevation with only a mild degree of infiltration, it has been our custom, first, to apply a 10 or 20 mg. plaque, screened with 0.10 mm. of aluminum for a period of two or three hours. This will cause, after ten or fifteen days, a reaction, which is followed, after twenty or thirty days, by degeneration and perhaps an exfoliation of all superficial pathologic cells.

Before this reaction has begun or immediately after the first application, we apply a plaque of from 10 to 20 mg., with screening of 0.3 mm. of brass, for eight to twelve hours. This filter permits only about 5 per cent. of the hardest beta rays and yet utilizes all the gamma rays for deeper effects. Thus we produce, in from four to six weeks, a perceptible softening and perhaps a complete disintegration of deeper cellular structures of cancerous nature.

In the treatment of Class 2, lesions of deeper and more extensive development, or of the squamous or the prickle cell variety, we first apply a 10 or 20 mg. plaque of radium over the lesion, screened with 0.3 mm. of brass for from ten to fourteen hours, reinforced within a few days by a pack of from 100 to 160 mg. of radium screened with

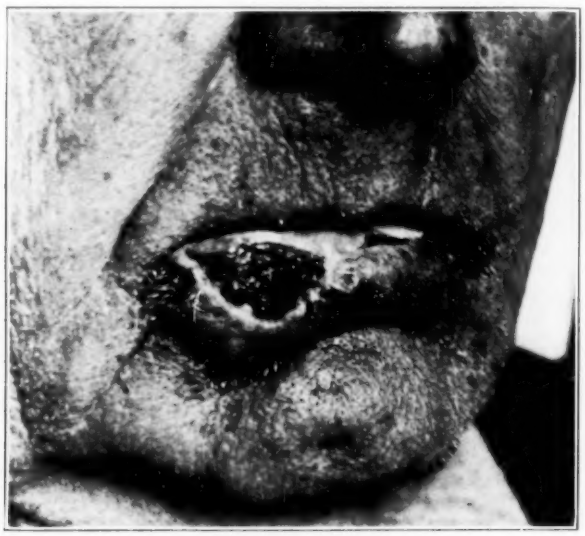

Fig. 3 (Class 2).—Cancer of lip, deeply infiltrated, involving submental glands.

2 mm. of brass and placed on a pad of gauze of from 1 to 3 cm. in thickness. This pack is located over regions of possible metastasis for a total of from fifteen to twenty hours and this application may be repeated within a few days until a total of from 2,000 to 3,000 mg. hours have been given.

In a certain class of indurated or deeply nodular cancers of the lips, we follow the applications of the plaques with as many radium needles inserted from 1 to 4 cm. apart as are necessary thoroughly to radiate the entire area of the cancerous growth. These are left for from three to five hours. Inserting the needles causes no severe pain if the entire growth is first injected with a 1 per cent. solution of procain.

We are indebted to Drs. Boggs, Clark, Pfahler and others for calling our attention to this valuable advancement in the application of radium to this class of cancers.

In tabulating our total number of cases of cancer of the lips, I wish to call attention to the following interesting findings:

Twenty-seven patients were examined and, after having the method of treatment explained and prognosis given, refused treatment.

In eight cases, or about 3.2 per cent., the lesions were located on the upper lip. Two of these patients were females.

In nine of the total number of cases of cancer of the lip the patients were females, and five of these were users of tobacco. Of Class 3, only three are now living and each still shows evidence of progressive cancer.

Fig. 4 (Class 2).—Patient shown in Figure 3; no evidence of recurrence three years later.

Each of the eight cases of Class 3 and ten cases under Class 2 were recurrences following caustics or surgery. Of eight deaths under Class 2, five followed the employment of caustics and three were post-operative cases.

If we eliminate from Class 1 one patient who died from a cancer on the hand, one who died from a sarcoma at the point of the shoulder and one who died from generalized lymphosarcoma, conditions which could scarcely be classed as metastases from the lips, our percentage of cures in Class 1 is 98 plus.

Under Class 2, we note that, since the beginning of the more recent and much improved methods of radiation with a heavy kilo-

voltage and radium packs, or, better still, when radium needles are inserted into the glandular metastasis, our percentage of cures promises to fall not far short of that of Class 1.

CONCLUSIONS

The cellular morphology of a cancer of the lip has less importance in the prognosis than the location or degree of development, or the age of the patient. We have repeatedly observed that, on account of a beginning atrophy of the lymph system, after a certain age the prognosis is better. Especially is this true in cancer of the lower lip.

TWO HUNDRED AND FORTY-EIGHT CONSECUTIVE CASES OF CANCER OF THE LIPS

Treatment and Results	Number	Percentage
Refused treatment	27	
Total taking one treatment only for palliative purposes or taking up some other form of treatment	13	
Total number of cases of upper lip involvement: Class 3, two patients, both now dead; Class 2, one living; Class 1, six, all living	8	
Class 3 (all postoperative or postcaustic treatment), total number of cases—each traced	8	
Total number of patients living more than one year, one; two years, much improved, though not well	3	
Class 2: Total number of patients treated (seven cases were postoperative or postcaustic)	35	
Unable to trace	3	
Patients living and well after one year	32	
Well after three years, 18 patients treated	13	72.2
Living and well more than five years, 14 treated; two died from other causes	12	
Class 1: Total number of patients treated to January, 1922	156	
Died of accident, two: committed suicide, one, each during first year	3	
Died of cancer during first three years, one of liver, one of deep cervicals, one of generalized lymphosarcoma and one of cancer on back of hand	4	
Total living after one year	101	
Total number of patients treated more than three years	89	
Total living, no recurrence	87	97.7

We believe that a prickle or a squamous cell cancer, in the early stage of its growth, will undergo degenerative changes under radiations from either radium or roentgen ray just as the basal cell variety does. They differ only in the amount of radiation necessary and the technic of its application.

Finally, we believe that sufficient statistics verified both by clinical and by laboratory findings have now accumulated to justify the conclusion that cancer of the lip is equally and perhaps more amenable to treatment by roentgen ray or radium than by surgery, and in most cases radiotherapy is to be preferred.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. PARKHURST, HIGHMAN, TAUSSIG, PFAHLER AND LAIN

Dr. Gordon B. New, Rochester, Minn.: I do not believe any one is more enthusiastic about the use of radium in malignant disease of the head and neck than I am, but I believe that a great deal of harm has been done both to radium therapy and to patients when surgical conditions are treated with radium alone. I also believe that the good end-results of the treatment of epitheliomas of the lower lip with radium alone have been much overshadowed by the bad results. One must appreciate the fact that the diagnosis of these conditions must often be made microscopically. Fifty per cent. of questionable lesions of the lip are not malignant and must be excised for a microscopic diagnosis, so that the question of diagnosis must be considered in the cases of patients who are treated and cured with radium alone. If all lesions of the lower lip were excised for diagnosis, the mortality of epithelioma of the lip would be reduced a great deal; and I believe the cosmetic results in the cases I have seen treated surgically compare favorably with the results following radium. The glands of the neck should be removed in all cases of cancer of the lip. Radium should be given before and after operation, but not used alone in these conditions.

Dr. Joseph C. Bloodgood, Baltimore: The view I desire to emphasize is that at the present time the chief hope of preventing cancer is to get early cases, and I have demonstrated that 50 per cent. of the cases from which I have excised a V-shaped piece from the lip are not cancer. Another thing we must bear in mind is this: some people with cancer, who, before the days of publicity, waited so that we never saw them until they had hopeless metastases, now come to the physician early. Publicity has done that. We must also know what condition we are treating. We cannot make progress if we do not. Fifty per cent. of my last 100 cases clinically called cancer were not cancer. We have reduced the cases of cancer from 85 to 70 per cent. by excluding conditions that are not cancer; you cannot exclude cancer by reading the pathologic report. I want the sections and want them studied and restudied. The medical schools of the country have not the money to give us to make these investigations.

Dr. F. J. Eichenlaub, Washington, D. C.: Apparently dermatoses seen in the Middle West differ from those we see in Washington. I learn that ringworm of the scalp is cured by the application of a simple ointment, and now I learn that probably 98 per cent. of the cases of prickle cell cancer can be cured with radiotherapy. Our number of cases is small because we believe that prickle cell cancer of the lip is best treated with surgery, and so we send the patients to the surgeon. Of the fifteen patients we have treated, eight are dead or have recurrences; of the remaining seven, four have been well for only a year or two, so it is too early to call them cured. We have had one case treated just as a wart, then as a basal cell cancer, to the point of a third degree radiodermatitis. Before this reaction healed, the cancer recurred in the middle of the burn. When excised it proved to be a prickle cell cancer. This one case is enough to show that all prickle cell cancers cannot be destroyed by radiation, even when superficial and treated early. I cannot help but feel that surgery offers the best hope in prickle cell cancer of the lower lip.

Dr. William H. Guy, Pittsburgh: There seems to be a complete agreement in regard to prevention of malignancy about the tongue and lip by propaganda and publicity, and certainly we are all indebted to Dr. Bloodgood, if to any one, for what he has done to encourage this work. Further, there can be no divergence of opinion regarding the necessity for removal of points of irritation, and, in general, the application of oral hygiene, thus preventing malignancy in early cases that are definitely benign. There is a wide divergence of opinion, however, as to what is to be done after it is eventually determined that we are dealing with malignancy. Dr. Bloodgood's results are excellent, but I am not convinced that they are better than those obtained by other methods. We cannot attack every case in the same way and obtain the best results. Each and every case must be treated according to its own individual requirements. It would appear that in the early type of case classified as "local, likely malignant," without gland involvement, that either with surgery, electrocoagulation, or radium practically 100 per cent. are cured. In cases with gland involvement we find an increasing discrepancy of opinion. We have been told that nothing but excision of the mass with wide excision of the glands in the area will do. The difficulties of such a procedure are seen when we review the gland drainage of the area. All metastatic glands are not palpable, as we know, and many palpable glands are not carcinomatous, but inflammatory. A combination of methods, surgery, electrocoagulation and radiotherapy may be required in such a case. If absolute diagnoses are necessary, I favor biopsy, and this should always be preceded by the application of a heavy dosage of roentgen rays or radium. If these elements devitalize pathologic cells, radiation preliminary to either radical removal or biopsy is definitely indicated. There is still room for an honest difference of opinion in these cases. I am convinced that by a combination of methods and especially by the hypodermic method of using radium in both the primary growth and palpable glands, followed by intensive raying of the entire gland-bearing area, results at least equivalent to those obtained by advance surgery may be attained.

Dr. Richard L. Sutton, Kansas City, Mo.: I was much interested in Dr. Bloodgood's suggestion regarding tobacco as a causative agent in cancer of the mouth. In the Middle West, sunburn probably plays a more important part than tobacco. We see many cases of lip involvement. Seborrheic keratosis of the keratoid type not infrequently is followed by the development of carcinoma, usually of the prickle cell type. The fact that primary lesions are much easier to cure than secondary ones was first pointed out, I believe, by the late Dr. Heidingsfeld of Cincinnati. In those cases in which carcinoma recurs in scar tissue, one gets into all sorts of trouble. This is especially true in those cases in which caustics (such as arsenic paste, and similar agents) have been used. A cancer quack can take a simple, uncomplicated case of basal cell cancer of the skin, a case that could be cleaned up in a short time with radium, or even with a curet and acid nitrate of mercury, and by the use of some "simple, farm remedy," convert it into a lesion which involves not only the underlying periosteum, but the bone as well; and the patient is promptly placed beyond the possibility of a permanent cure. Dr. Elmer Twyman of Kansas City has called attention to the fact that as a rule in carcinoma of the lip the lesion exhibits a tendency to travel laterally downward, instead of directly downward. In my work with him, we have found best a combination of methods, radium and cautery for the mouth and tongue lesions, with erythema doses of roentgen ray in the submaxillary and submental localities. Carcinoma of the lower lip so often develops from keratoses. Only an

eagle-eyed genius can know when all of the keratosis has been included in the excised area, and if it has not been, recurrence is prompt, and extension rapid, along the line of the scar.

Dr. G. A. Wyeth, New York: Dr. Taussig said that he has prolonged life in cases of carcinoma of the tongue without mutilation, and he consoles himself with this although he says he has had only a fair number of recovered patients. I think if he had mutilated a little more at the start he would have prolonged more lives and prolonged life longer. As Dr. Taussig said, many men have reported excellent results with electrocoagulation in the treatment of carcinoma of the tongue. It is not hard to understand how these excellent results have been obtained. The use of heat in the tissues from within, or endothermy, as I like to call it, greatly reduces the danger of metastasis and the likelihood of recurrence. How? Before a malignant area is touched it is completely surrounded by a wall of coagulation necrosis which destroys or seals off the blood vessels and lymphatics to and from the part. A specimen for microscopic section can now be taken with impunity, after which the whole malignant area is coagulated in situ and then cut out with scissors as an inert, necrotic mass rather than as a group of viable cells. Endothermy comprises two different technics, as developed by Dr. Clark of Philadelphia—desiccation for lighter work, coagulation for heavier work—and through them the operator has a wide range of destruction at his command. This is my reason for thinking we have fewer recurrences than surgery unattended has.

Dr. C. H. Ball, Tulsa, Okla.: If 50 per cent. of cases are not cancer, why perform a mutilating operation? If the condition can be eradicated by radium or roentgen ray, why not try that first instead of mutilating the patient? In my experience with the roentgen ray, results have been the same as Dr. Lain's. The roentgen ray removes the cancer and effects a cure in 98 per cent. of the cases. Why, if you obtain 98 per cent. cures, should you resort to any other method? Traumatic interference breaks down the natural resistance of the body, and metastases occur much sooner.

Dr. T. C. Kennedy, Indianapolis: I cannot agree with Dr. Bloodgood about his cures by surgery. If that is true, we have poor surgeons in the West. During the last year I have had nine patients come to me for radiation who had been operated within a year or a year and a half. He is certainly doing better work than our surgeons in Indiana. I have had many cases of carcinoma of the lip in the last few years and our results have been uniformly good. I do not mean that we cure all cases, for no method will do that; but in the treatment of cancer of the lip our results are so successful that I believe every patient should be treated with radium before operation is resorted to. If you treat the patient for a few weeks and the condition does not yield, it is not too late for operation. I think in every case the roentgen ray should be used before operation is advised. I do not know whether I understood Dr. New correctly, but I think he said he preferred operation. The cosmetic results from radium are far superior to any surgical results, and if we can cure these patients in this way, why operate? If there are any cancer cells, we are far more likely to spread them by operating than we are to cure them. I am satisfied that in cancer of the lip radium is more successful than surgical treatment.

Dr. F. W. Cregor, Indianapolis: I think we have no right to call these cases cancer until they have been proved to be cancer. Fifty per cent. of Dr. Bloodgood's cases called clinically cancer were proved not to be cancer. I do

not think we should attack his position. I can subscribe to the position of Dr. Guy and of Dr. New, and I can also visualize an injury to normal tissue cells about these growths as the result of intensive roentgen ray or radium therapy. It seems to me like sending an army of cripples out to perform the functions of able-bodied men. According to Kinlock, the roentgen-ray burns that do not heal within a year become carcinomatous because of the traumatism of the normal tissue cells by the roentgen ray; so that if we are attempting to destroy these cancer cells which possess a very high radiosensibility, we must realize that we are injuring tissue cells that possess a lesser degree of sensibility, even though we are not destroying the cancer cells as we hope to do.

Therefore, I believe that the agent that destroys the macroscopically pathologic tissue, and the employment of radium, or especially roentgen rays, in the surrounding tissues afterward, in a dosage of not sufficient strength to impair normal tissue, but which we may hope will destroy pathologic tissue, is the method of choice.

Dr. John H. King, Nashville, Tenn.: Every case is a law unto itself, and we cannot use the same treatment in all. If we are treating a lesion on the lip, we should know the type of cancer and determine whether we are going to treat it with the roentgen ray, radium or electrocoagulation. If a case is treated by radium, the glands of the neck, submaxillary and submental, should receive deep roentgen-ray treatment or blunt dissection. I do not think we have a right to dismiss a patient without giving him the advantage of those two procedures. We know that many cases will recur, and we cannot say which they will be; if it is in our power to prevent these recurrences I think we should do so. Therefore, we should have a blunt dissection, a careful one, and a thorough radiologic treatment. A few weeks ago I had a case of recurrence in the submaxillary gland, that was quite large. I used the needle and heavy roentgen ray. The tumor-like formation disappeared remarkably quickly after three weeks. As the submaxillary and submental glands are the ones we first see affected, why can we not insert our radium needles in the areas we cannot strike with the rays? We cannot strike these glands because we cannot see them, but why cannot we do this as a prophylactic measure? It causes little discomfort, and we can leave them in for three, four or six hours as a prophylactic measure before any enlargement is observed.

Dr. Moses Scholtz, Los Angeles: One of the essayists has discussed roentgen-ray therapeutics in chronic nonmalignant inflammatory dermatoses, such as acne, lichens, psoriasis, eczemas, etc. There seem to be two points of view. The roentgen-ray experts and advocates of massive doses are looking for the largest dose that will not produce unpleasant after-effects. Another thing is to look for a minimum dose that will give the desired results. I think dermatologists should adopt the second point of view. There are essentially two dermatologic conditions calling for massive doses: malignancy and tinea of the scalp. In chronic inflammatory dermatoses we will get along much better with small fractional doses. I believe that in this group of dermatoses it is not only permissible, but distinctly helpful, to combine small fractional roentgen-ray treatments with exposures to ultraviolet light. By this means of additional sensitization we are able not only to reduce the number of roentgen-ray treatments to a minimum, but also the size of individual doses. I seldom use more than one-eighth or one-seventh of a skin unit with a spark gap of from 4 to 6 inches in chronic eczemas, lichens, acnes, etc. I cannot see the advisability of using one-fourth of a skin unit for many weeks in acne, a con-

dition so benign and yielding so readily to therapeutics. Only very few, truly exceptional, cases would justify such heroic treatment. An overwhelming majority of acne cases will yield to ultraviolet light alternating with casual roentgen-ray treatments of much smaller aggregate dosage.

Dr. I. L. McGlasson, San Antonio, Texas: I take it from Dr. Bloodgood's and Dr. New's remarks that they meant the best type of surgery and perhaps compare it with ordinary radiotherapy. Then the results are not 100 per cent. perfect. All surgeons are not the best surgeons, nor are all radiotherapists the best in their line. All these things should be taken into consideration in discussing this subject in an effort to arrive at a conclusion. Dr. Bloodgood's statement is broad even for so eminent an authority. I am satisfied with my present treatment of cancer of the lip. I think I have overlooked something good in not following Dr. Pfahler's method of electrocoagulation, and I think that his plan is well worth while. Many patients with recurrence of cancer of the lip are sent to us by surgeons, and in these cases we get the worst results. If we have a failure, they say that radium is no good. I am curious to know whether the friends who talk against radium actually use it and have a sufficient amount. I think we should report our end-results, good or bad, until we can show something definite.

Dr. Davis W. Goldstein, Fort Smith, Ark.: I do not believe that in cases of cancer of the lip there can be any routine treatment. If we see a patient who has received no previous treatment, we believe that patient should receive radiotherapy. It does not make any difference whether you use radium, the roentgen ray or electrocoagulation to destroy the tumor. We formerly used carbon dioxid snow for the local lesion, with good results. Whatever method is used, the glands should be irradiated. If the patient has received previous treatment, I believe it is a surgical case. The cell is weakened by previous treatment, and it will not regenerate. I have had numbers of failures after the lesions were treated with caustics. The mucous membrane of the oral cavity is the most resistant of all tissues of the body to radium, and whether you use surgery, caustics or what-not, it is essential to take care of the lymphatics either by radium, roentgen-ray or complete block dissection.

Dr. Earl D. Crutchfield, Galveston, Texas: Some years ago I made a study similar to Dr. Parkhurst's. It seems to me that the reaction in these cases is more a reaction of the cell to particular environment under which the attack occurs than a definite specific reaction to the basal cell or the prickle cell epithelioma. Drs. Highman and Rulison spoke of the stimulating roentgen-ray dosage. In an incomplete study during the last eighteen months I have not been able to see any evidence of stimulation in any form of roentgen-ray dosage. I am not sure that the roentgen ray ever stimulates. The stimulation or reaction which may occur can be explained as a biologic reaction of the normal cells rather than as a stimulating reaction to the roentgen ray. In no case have I been able to see that mitoses were produced by the roentgen ray. One point in regard to surgery of the lip: Two or three years ago I studied serially sections of tumors of the lip which had been excised. Apparently on first examination many of these tumors seem to be small, localized lesions, but if serial sections are made, very often one is able to find small scattered cell nests in the edges of the lesions. The question then arises, When may we completely remove a lesion? If we knew that, then, perhaps, surgery would be the method of choice, for a great plastic surgeon; but if a piece of the lip is excised no man has the judgment to say whether or not the excision has

been sufficiently extensive. We know that if ever a malignant growth is cut through, the possibility of metastases becomes very great. Therefore, since irradiation by the roentgen ray shows such a large percentage of cures radiation is certainly the method of cure; and electrocoagulation, which seals off everything, should be used as the method of removal.

Dr. Ben R. Kirkendall, Columbus, Ohio: I am glad that Dr. Pfahler has told us what to do for cancers of the lip that have been treated with roentgen rays but not cured. If we can cure these cases with electrocoagulation and not make them worse, it is a new method that can help us out. I think a great many nonmalignant growths of the lip would become cancers eventually. They are probably precancerous lesions, and the results we obtain with radium and the roentgen ray seem to be almost perfect in these cases. Dr. Lain's paper, with its statistics, shows almost perfect results with radiation, so why perform a mutilating operation first. That should not be resorted to until it is necessary. I believe that these patients, whether treated by radiation or surgery, should all be irradiated under the jaw where glandular involvement may occur. I wish to caution about the application of radium after roentgen-ray treatment in cases of cancer of the lip. I have had several cases of cancer of the lip in which the patients have first been treated, I suppose, with massive doses of roentgen ray. When they came to me there was probably more radiation in the growth than could be determined. We have been told not to treat with radium or roentgen ray until from four to six weeks have elapsed since the previous treatment. I have waited as long as four months to apply radium following roentgen ray and have had the whole lip slough off in two cases. Dr. Pfahler's electrocoagulation might have taken care of these patients and prevented this mutilation.

Dr. H. J. Parkhurst, Toledo, Ohio: There is at least one difficulty attending the use of arsphenamin as a therapeutic test in differentiating between epithelioma and syphilis: the arsenical preparations often seem to accelerate the development of a malignant process when it is present. Therefore, great caution is necessary. Concerning the subject of the tissue reaction in malignant epitheliomas, the literature contains few references; and this work has been offered with the hope of stimulating investigation along this line.

Dr. R. H. Rulison, New York: Dr. Scholtz says he combines the roentgen ray with the ultraviolet light. I have had no experience with this. In general, perhaps, we are too conservative, but if we have an erythema, due, possibly, to a simple sunburn, we are likely to postpone treatment and wait for it to subside, and on that basis I think we would not care to combine the two methods. Dr. Crutchfield makes the criticism that in one place we speak of the stimulating effect of the roentgen ray. Whether there is such an effect, I do not know. I have no defense to offer for using it, except that there are certain authorities who think this may happen. It seems to me we are not accomplishing much in the discussion because of the difference in terms.

Dr. Laurence Taussig, San Francisco: As I have tried to point out, the diagnosis of carcinoma of the tongue is difficult to make in many instances. Dr. Parkhurst pointed out the possibility of stimulating the growth by arsphenamin but, having made up our minds as to the probable diagnosis, we must treat it with that diagnosis in mind, being ready to change our method of attack whenever indicated. I think the main thing in carcinoma of the tongue is to make a correct diagnosis as early as possible in order to institute proper treatment.

Dr. George E. Pfahler, Philadelphia: We should treat each patient as an individual, and adopt the best treatment for each individual case. I have seen recurrences follow operations by the best surgeons in the country, whose names if mentioned would produce no doubt of their ability or good judgment. It must not be forgotten that the purchase of an amount of radium, either large or small, is no more a certainty of efficiency in its use than the purchase of a set of surgical instruments will guarantee a good operation. In my treatment with electrocoagulation, I always outline the surrounding edge in each case so that I know just how much is going to be taken away. That also seals off the lymphatics and blood vessels. I then trim it off with a pair of scissors, and at times the upper portion of that lesion can be sent to the pathologist for examination. There is no bleeding, which proves that I have actually sealed off the blood vessels and lymphatics. I give radiation over the lip and chin and the submaxillary and submental areas. This should be added to any other form of treatment. When there are palpable lymphatic glands, I am not sure whether these had better be treated first by general radiation and then excised, or whether we had better treat with general radiation and then introduce radium needles into the lymph nodes. I think we must let time tell us which is best.

Dr. E. S. Lain, Oklahoma City: Dr. King has asked me what I think of the treatment with radium needles introduced into all metastasizing glands or where metastasis might occur. I think this is good procedure though not as a routine treatment. This was done in one of our cases. As regards the standardization of roentgen-ray and radium treatments, I do not think such treatment can be standardized. Surgical or medical treatments are not standardized for any disease. If we should reach such a period, progress in therapy will cease. One thing that Dr. McGlasson mentioned I have also found true. Namely, in my Group 3, the advanced cases, all patients had previously been treated by plasters or by incomplete surgery. The radiotherapist has too long been made a "dumping ground" for hopeless cases, as has been said. You recall that twenty-seven of my patients did not take treatment, and that was largely due to our resolve not to be made a dumping ground for all cases in which other forms of treatment had failed. As regards the claim of a cure in 98 per cent. of squamous or prickle cell malignancies, Dr. Pfahler misunderstood me. I said that Hazen, quoting from the Bloodgood laboratory, reported that most cancers of the lips were of the squamous or prickle cell variety. I said that we have been able to effect a cure in 97.7 per cent. in Class 1. In Class 2, in which the glands were freely palpable and in which we had other evidence of metastasis, we have a percentage of 72.2 per cent. of apparent cures after three years. Our methods have improved during recent years, though had we combined other methods, such as Dr. Pfahler's electrocoagulation method, other patients might have been cured. Let me repeat that I do not believe we should entirely exclude surgery in the treatment of cancer of the lips. I do, however, insist that when we consider all phases of the patient's welfare and compare statistics on the various methods of treatment, we shall find in the use of radium and roentgen ray the most acceptable method.

CUTIS VERTICIS GYRATA*

REPORT OF CASES

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SAN FRANCISCO

Cutis verticis gyrata has been well described by various authors since the first report by Jadassohn at the Ninth German Dermatological Congress in Berne. A recent interesting report and review of the literature by Wise and Levin[1] describes the first example of the anomaly observed in America. As far as I know, the cases that I am presenting constitute the second and third reported in this country.

The condition is characterized by the appearance of deep furrows and convolutions in the upper posterior portions of the scalp more or less resembling cerebral convolutions. By many it is regarded as a congenital tendency to furrowing which becomes pronounced later in life. My first patient comes in this category. Some believe that the process is usually intensified by local inflammation. My second patient comes under this classification.

Through the courtesy of Professor Lesser, I had the privilege of seeing a case in Berlin in 1912, so the scalp that I am presenting here constitutes the second well developed example of the condition that I have seen.

My first patient's scalp, preserved in Kaiserling solution No. 4, is here presented for your inspection. My second patient, presenting the deformity in its early stages, refused to part with his scalp. A photograph will be published later.

As will be noted on studying the gross specimen and photograph, the appearances suggest neurofibroma. We thought (and hoped) that it was that condition but microscopic study failed to disclose the presence of nerve tissue, and there were no lesions elsewhere.

REPORT OF CASES

History.—An apparently healthy Jewish girl, 15 years old, had had an oval well circumscribed sessile tumor with numerous convolutions covering most of the back of the head since birth. It had slowly grown larger, with deepening of the sulci. The growth had progressed more rapidly during the last few years. It had never been painful.

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* Read at the Forty-Fifth Annual Meeting of the American Dermatological Association, Washington, D. C., May 2-4, 1922.

1. Cutis Verticis Gyrata—Report of a Case. Wise, Fred, and Levin, Oscar L.: Interstate M. J. **25**: No. 5, 1918.

She had always been in good health with the exception of occasional headache and nausea in the morning. She also had had measles, pertussis and parotiditis in early childhood, with no sequelae. There had been no accidents, operations or local infections, and the scalp had never been inflamed. For several years she had had occasional general headache and nausea in the morning.

Her eyes, ears, nose and throat had always been normal, and there never had been marked glandular swelling. She did not have goiter. There was no evidence of past or present disease of the respiratory systems. Her mentality was quite good.

Examination.—The skull was dolichocephalic in form. In the occiput and extending almost to the top of the head was an oval, sessile tumor with a

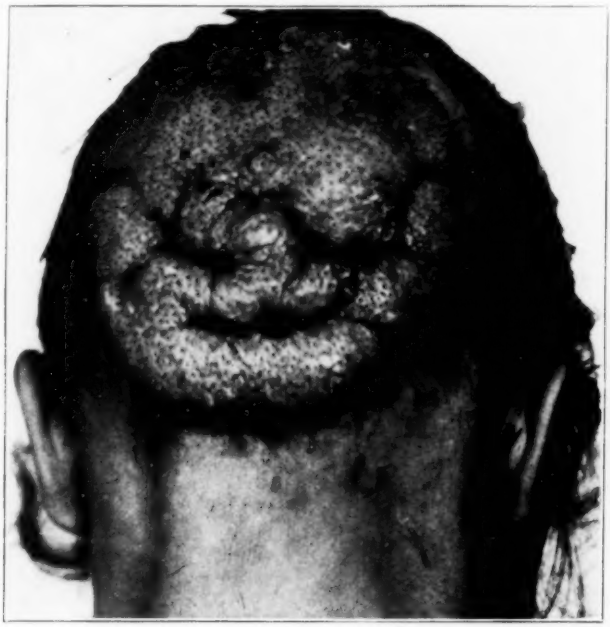

Fig. 1.—Cutis verticis gyrata in a girl, 14 years old, with a dolichocephalic type of skull. The hair was shaved for operation.

sharply defined, slightly constricted base. It was about 15 cm. in its broadest diameter and was elevated about 1.5 cm. at its highest point. It presented three main horizontal furrows and five secondary ones with convolutions like those of the cerebrum. These furrows were narrow and deep. The skin was loose and soft, and through it many firm round nodules 0.5 to 1 cm. in diameter, resembling sebaceous cysts, were plainly felt. When the scalp was shaved for the operation, the skin was seen to be normal in appearance. The hair was long, thick and black. It grew evenly over the entire tumor mass. The rest of the scalp was normal.

Eyes: The pupils were equal, regular and reacted to light and accommodation. The conjunctivae, eyelids and lashes were normal.

Nose: There was no obstruction or discharge.

Ears: The hearing was good. There was no discharge.

Mouth: The teeth were good and well kept. The tongue protruded normally. The tonsils were fairly large but apparently not diseased.

Neck: There were a few small palpable glands in the posterior cervical triangles. There was no goiter. There were no abnormal pulsations.

Chest: The cardiovascular and respiratory systems were normal.

Abdomen: The abdomen was flat. There were no masses or areas of tenderness. The liver and spleen were not palpable. The reflexes were normal.

Unfortunately, complement-fixation tests were not made. However, there was no personal or family history suggesting syphilis, and there were no stigmas.

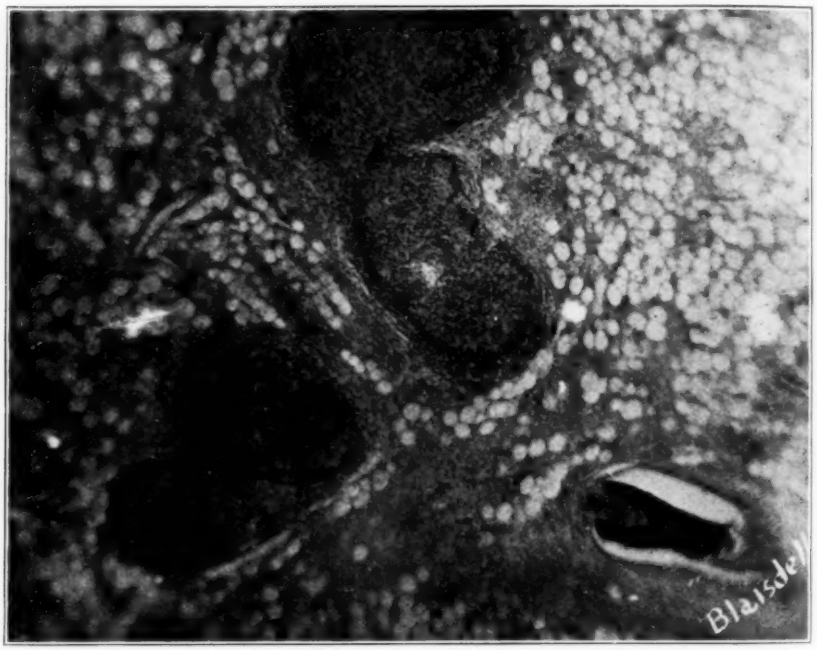

Fig. 2.—Four fibrous cords in corium. Note adipose tissue and hair follicle. Van Gieson stain.

Treatment.—Dr. Phillip K. Gilman, associate clinical professor of surgery, Stanford University Medical School, to whom I am indebted for the privilege of reporting the first case, removed the growth in its entirety and applied Thiersch grafts from the thigh. There were no particular difficulties connected with the procedure. The patient, after having been observed regularly for six weeks, was dismissed in "excellent condition." Since then our social service department has been unable to locate her.

Histologic Findings.—A piece of the growth from the summit of a convolution, including the skin, was fixed and hardened in formaldehyde solution. Sections were stained with hematoxylin and eosin, Mallory's connective tissue stain, van Gieson's stain and silver nitrate.

The tumor, preserved by the Kaiserling method No. 4, is presented for inspection. This work was done by Dr. F. E. Blaisdell, associate professor of surgery (surgical pathologist) of Stanford University.

The epidermis showed pronounced acanthosis with slight hyperkeratosis. In the upper corium the collagen showed lessened affinity for the acid stain. There were numerous young connective tissue nuclei and dense collections of pigment here and there. The blood vessels were quite numerous, dilated and their walls were not thickened. There were occasional plasma cells. Fat cells were rather numerous even in the upper regions.

The lower corium showed the chief changes. Here there were large cords or whorls of connective tissue, the bundles running in every direction. In between them were many fat cells. These structures extended down into

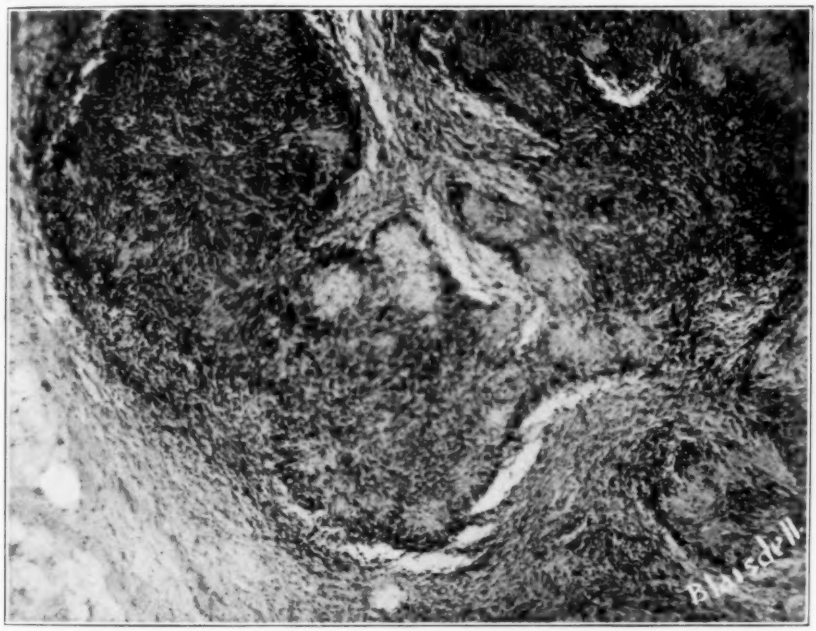

Fig. 3.—Fibrous cords under higher magnification. Hematoxylin and eosin stain.

the subcutaneous tissue where they were numerous. Many of these bundles were packed closely together.

The collagen in places took the acid dye intensely. The numerous sebaceous glands were quite large. The hair follicles were normal. Occasionally there was seen dense perifollicular infiltration of small round cells which extended the full length of the hair. Some apparently independent collections of these cells in serial sections belonged to the perifollicular deposit. No polymorphonuclear leukocytes were seen. The sweat glands were normal. No nerve tissue was seen.

Comment.—The general appearances and certain special features suggested a congenital connective tissue growth involving the skin. The signs of inflammation here and there were apparently incidental results

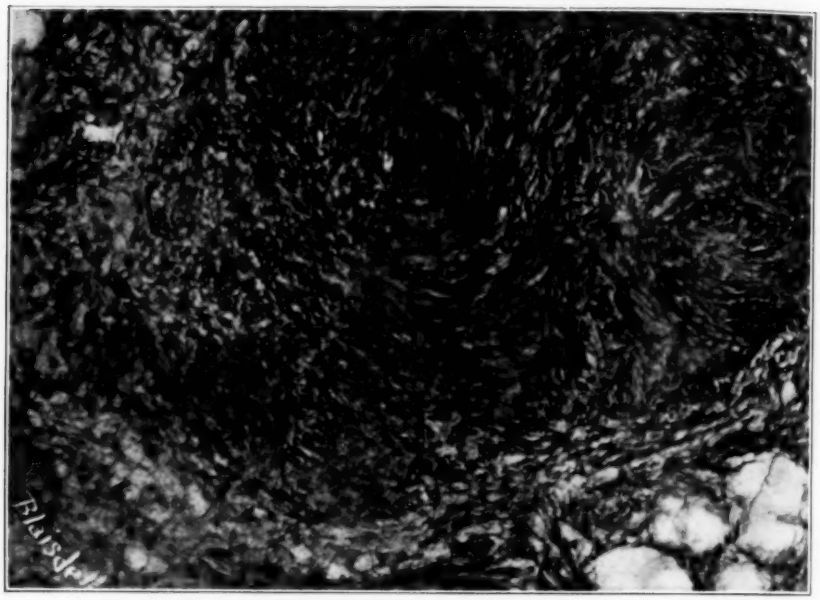

Fig. 4.—Fibrous cord under higher magnification. Note whorling and interlacing of fibers. Van Gieson stain.

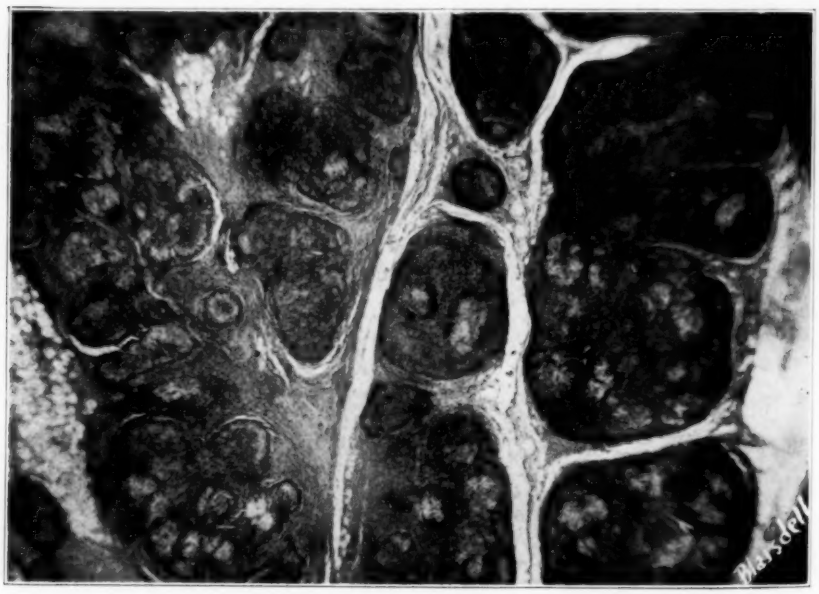

Fig. 5.—Portion of growth in subcutaneous tissue, showing the fibrous cords. Hematoxylin and eosin stain. Low magnification.

of slight traumatism. The nodules feeling like sebaceous cysts probably owed their characteristics to the arrangement of the numerous thick fibrous bundles and the uneven distribution of the fat.

Summary.—We have a case of cutis verticis gyrata in an otherwise normal girl, 15 years old, in good health (barring occasional headache and nausea). The condition had existed since birth and had increased in size during the development of puberty with the natural increase in activity of the pilosebaceous system. There was no history of past inflammation, as observed by various authors. The patient had a dolichocephalic type of skull, thus differing from the patients in most cases reported, in whom the brachycephalic type prevailed.

Fig. 6.—Section through entire thickness of scalp, showing growth in corium and subcutaneous tissue.

Case 2.—I have another case under observation at the present time, in its earlier stages. The patient, a prosperous Jew, 54 years of age, obese, has a brachycephalic type of skull, a short thick neck and rather tightly drawn scalp. In the occipital region there is a deep narrow horizontal, tensely drawn, permanent furrow with a smaller curved offshoot from the same just above its right outer third. The condition has existed four or five years only. It is gradually becoming more accentuated. The hair is black, thick and normal. The patient has a seborrheal skin with typical seborrheic dermatitis in the occiput, umbilicus, groins and internatal region. The obstinate seborrheic eczema seems to be a factor in the process. I believe that the chronic inflammation there is resulting in connective tissue proliferation with consequent accentuation of the cutis verticis gyrata.

I have seen several similar but less marked cases in which the scalp was not diseased. One can see conditions approaching this in almost any crowd. A brachycephalic head with a short fat neck seems prone to develop horizontal and secondary furrows in the occiput. It is only cases showing increasing persistence of these furrows in the occiput and higher, of course, that can be regarded as early examples of cutis verticis gyrata. When chronic local folliculitis or eczema develops, naturally connective tissue proliferation occurs, and eventually the thickening of the corium and subcutaneous tissue results in the formation of this deformity.

DISCUSSION

Dr. Fred Wise, New York: I reported with Dr. Levin what we thought was a typical case, but we were unable to perform a biopsy, which detracted from the value of the report. The second case in New York was presented by Dr. Fox two years ago.

The interesting point in Dr. Alderson's paper lies in the fact that the lesion is different from those described in the literature, the difference being that this is a decidedly circumscribed elevated growth and does not run into the scalp as all the other cases do, and I am inclined to believe that it should be interpreted as a nevus. It is a form of cutis verticis gyrata, but of nevus origin. The other cases described in the textbooks as nevus cerebelliformis are probably examples of this. The microscope reveals the facts, and the histology in those cases must be different from that described by Dr. Alderson.

Another statement occurring in the literature is that there are probably two very different types of cutis verticis gyrata, one in which there is a marked inflammatory process and the other in which no inflammatory reaction has ever been present.

Dr. Harry E. Alderson (closing): This summer more material from the specimen will be worked up thoroughly; sections from every part of the growth will be studied, and a complete report will be sent in later for publication.

PHYSICAL PRINCIPLES UNDERLYING THE DEVELOPMENT OF HIGH VOLTAGE ROENTGEN-RAY APPARATUS *

C. N. MOORE, M.D.
SCHENECTADY, N. Y.

Until recently, most roentgenotherapy was practiced with voltages up to approximately 100,000 applied to the roentgen-ray tube. The roentgen rays generated at these voltages produced definite biologic reactions at or near the surface of the body. Because of their comparatively low penetrating power, however, these rays were rapidly absorbed by the tissues, and it was difficult to deliver any effective amount to a point much below the surface without injury to the overlying tissue.

Figure 1 gives a visual picture of absorption of roentgen rays as they pass through matter. It shows a cube of lead glass which was placed beneath a half inch opening in a lead diaphragm and exposed for several hours to the rays from a tube operating with four milliamperes at 200,000 volts (peak). This glass becomes brown under the influence of roentgen rays, and the intensity of the coloration indicates the intensity of the roentgen-ray beam at different depths below the surface of the glass. It will be noticed that the color is very dark at the surface and gradually becomes lighter as the depth increases. This illustrates the physical problem involved in deep roentgenotherapy, which, as I have said before, is one of getting sufficient roentgen-ray intensity at a point much beneath the surface of the body.

In the past, the use of multiple ports of entry and of cross-firing was resorted to in an endeavor to increase the intensity beneath the surface. Results obtained by this method are illustrated by Figure 2. In this case, a similar glass cube was exposed from four sides in succession and an area will be seen in the center of the cube where the combined roentgen-ray beams have produced an effect nearly equal to that produced by any one beam at the surface.

During the last few years, the tendency has been toward the use of higher voltages, in an attempt to increase the ratio of depth to surface dose. It is the physical principles underlying this method of attack that I am to review in this paper. Tubes to operate at the higher voltage and apparatus to produce this voltage had to be developed, and the

* Read before the Section on Dermatology and Syphilology at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

experimental work involved in this development was undertaken only after careful physical measurements had shown that a greater intensity at a depth could be produced by the use of higher voltage.

That the results of these measurements may be understood more clearly, let us first consider the beam of roentgen rays coming from any roentgen-ray tube. By means of a Bragg spectrometer and ionization

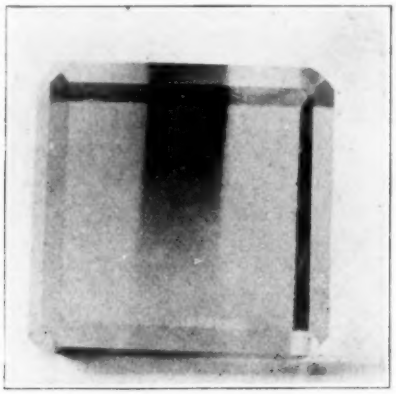

Fig. 1.—Absorption of roentgen rays in matter shown by color produced in cube of lead glass.

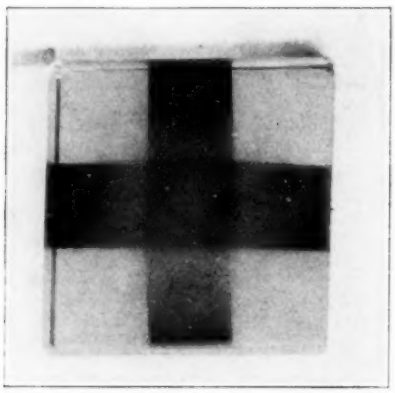

Fig. 2.—Cross-fire technic illustrated by color produced by roentgen rays in lead glass cube.

chamber, we may analyze this beam, and plot the spectrum, just as we would analyze the beam of light from an incandescent lamp. In doing so, we find that it is a composite beam made up of waves of varying lengths. Figure 3 presents a spectrum of the roentgen-ray beam operating at 40,000 volts,[1] and we find that the wave lengths vary from

1. Hull: Am. J. Roentgenol., 1915.

0.3 Å to 0.8 Å,[2] with a maximum of intensity at about 0.4 Å. We know that the shorter the wave length, the more penetrating power the roentgen-ray wave has, so that we are interested in anything that will give us a shorter wave length and a greater intensity of this shorter wave length.

Figure 4 shows the effect on the wave length and intensity of increasing the potential applied to the roentgen-ray tube. At 40,000 volts, the shortest wave length is about 0.3 Å, and this decreases to about 0.1 Å at 90,000 volts. At the same time, the intensity of the waves of shorter length has tremendously increased. There are still a lot of long wave lengths present, however. The same thing holds true as we go to still higher voltages, as is shown in Figure 5,[3] which gives the spectrum at 165,000 volts. Here the shortest wave length is 0.075 Å. The wave length of the gamma rays from Ra-C is approximately 0.004 Å. According to the work of Ellis in England, it would require a voltage of 3,000,000 on the tube to produce roentgen rays of this short

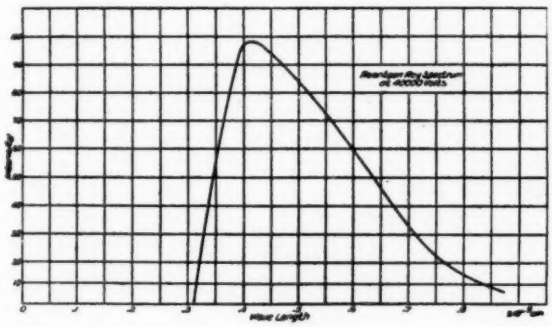

Fig. 3.—Spectrum of roentgen-ray beam from tube operating at 40,000 volts.

wave length. It is evident from these measurements that increasing the potential applied to the tube results in the production of a greater quantity of more penetrating rays.

For the purpose of cutting off the longer or less penetrating rays, it is customary to pass the roentgen-ray beam through some filter, a sheet of aluminum or copper, before it reaches the body. The effect of such a filter is shown in Figure 6,[4] in which the upper curve shows the spectrum at 70,000 volts without any filter and the lower curve the spectrum with a 3 mm. aluminum filter. It can be seen that the aluminum has reduced the intensity of the soft radiation (long wave

2. The Angström unit, 10^{-8} or $\frac{1}{100,000,000}$ cm. is the standard unit for expressing wave length.

3. Duane: Am. J. Roentgenol., March, 1922, p. 169.

4. Hull: Am. J. Roentgenol., 1915.

lengths) much more than that of the penetrating rays, but there is still a considerable amount of soft radiation left. This could, of course, be considerably reduced by the use of a great thickness of aluminum or a sufficient thickness of some denser material, such as copper, but not without cutting down the intensity of the useful penetrating rays to a small fraction of its original value. But we have already noted the effect of increasing the potential applied to the tube. Therefore, we are able to combine the two, higher voltage and greater filtration, to obtain a sufficient intensity of the more penetrating rays. This is

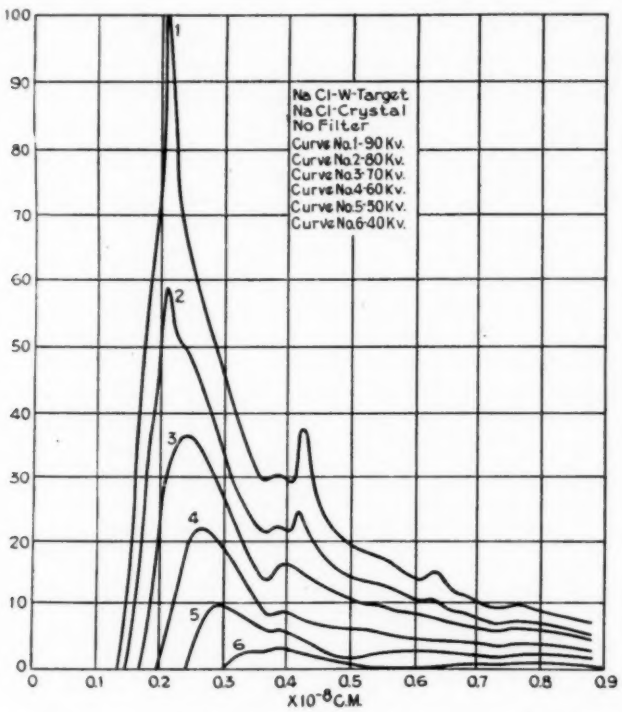

Fig. 4.—Roentgen-ray spectra from tubes operating at from 40,000 to 90,000 volts.

shown in Figure 7,[5] where we have plotted the intensities through different thicknesses of copper filters at various voltages of from 175,000 to 298,000. It will be noticed that for any voltage the intensity falls off rapidly with increasing thickness of filter, and that for any one filter thickness, for example 1 mm., the intensity increases rapidly with the voltage. When high intensity of penetrating radiation is desired, there is a strong argument in favor of the use of high voltage with sufficient filtration.

5. Coolidge and Kearsley, Jr.: Am. J. Roentgenol., February, 1922, p. 98.

So far we have been considering the roentgen-ray beam before it reaches the body of the patient. In deep roentgenotherapy, what we are interested in is the nature of the beam after it has passed through a certain amount of tissue on its way to the diseased area. To determine the physical characteristics of the beam within the body, we are accustomed to choose some material, such as water, which has about the same absorbing power as the body, and measure at some desired depth in the water, by means of the ionization chamber, the roentgen-ray intensity

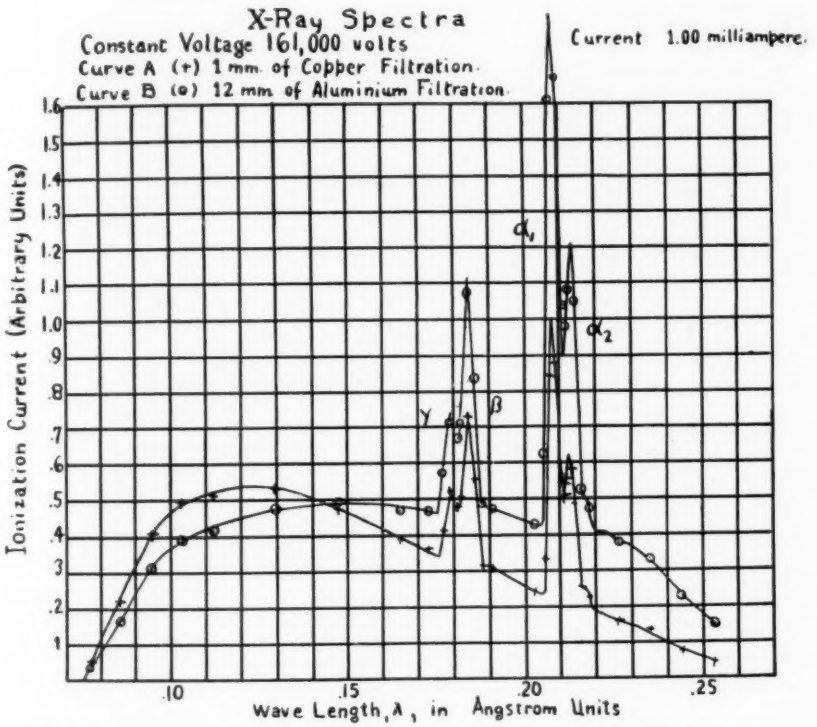

Fig. 5.—Roentgen-ray spectrum from tube operating at 165,000 volts.

with tubes operated at various voltages and with filters of various thicknesses. The results of such measurements are given in Figure 8.[6] Here we have plotted the percentage intensity beneath 10 cm. of water with the roentgen-ray tube operated at voltages of from 200,000 to 250,000, and with the roentgen rays filtered through 0.5 and 1.0 mm. of copper. With one-half millimeter of copper as a filter, the roentgen-ray intensity beneath 10 cm. of water is 14.75 per cent. of what it is at the surface of the water when 200,000 volts are applied to the tube,

6. Coolidge and Kearsley, Jr.: Am. J. Roentgenol., February, 1922, p. 88.

while it is 17.25 per cent. if 250,000 volts are employed. A similar increase is shown with 1 mm. of copper filter. The curves indicate clearly that, up to 250,000 volts at least, the percentage depth intensity increases with increased voltage and that it is greater the thicker the filter.

A third factor enters into the question of percentage depth dose; namely, that of distance from the focal spot to the surface of the body. In any particular case, the distance from the surface to a point beneath at which the roentgen rays are to be delivered is a constant, and the ratio of this distance to the total distance from the focal spot becomes less as the latter distance is increased. At low voltages, it was impossible to greatly increase the focal spot skin distance because the roengen-ray intensity decreases inversely in proportion to the square of the distance; that is, the greater the distance, the less the intensity. We have seen, however, that this decrease in intensity may be compensated for by increased potential applied to the tube, and increased filtration of the roentgen-ray beam.

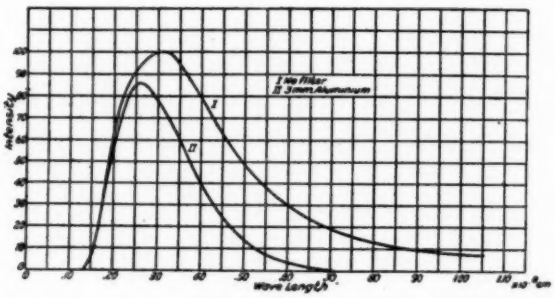

Fig. 6.—Roentgen-ray spectra at 70,000 volts with and without aluminum filter.

As a fourth factor, we have to consider the size of port of entry in regard to its effect on the percentage depth dose. The results of measurements made to determine the effect of varying this factor are given in Figure 9.[7] These curves show the percentage depth dose beneath 10 cm. of water for rays filtered through 3 mm. of aluminum, 10 mm. of aluminum, and 1 mm. of copper for three ports of entry, 5 by 5 cm., 10 by 10 cm., and 15 by 15 cm. It is evident from these curves that, within these limits, the percentage depth dose increases as the size of port of entry is increased. The explanation of this lies in the fact that roentgen rays in passing through matter generate secondary roentgen rays, and the effect of these secondary roentgen rays is added to that of the original beam. The greater the amount of

7. Krönig and Friedrich: Physikalische und biologische Grundlagen der Strahlen-therapie, 1918, p. 122.

matter subjected to the action of the original beam, the greater the amount of secondary rays generated, and, therefore, the greater the percentage depth dose. As has already been pointed out, the shorter the wave length of the roentgen ray, the greater the amount of rays which will pass through a certain amount of tissue. The combination of

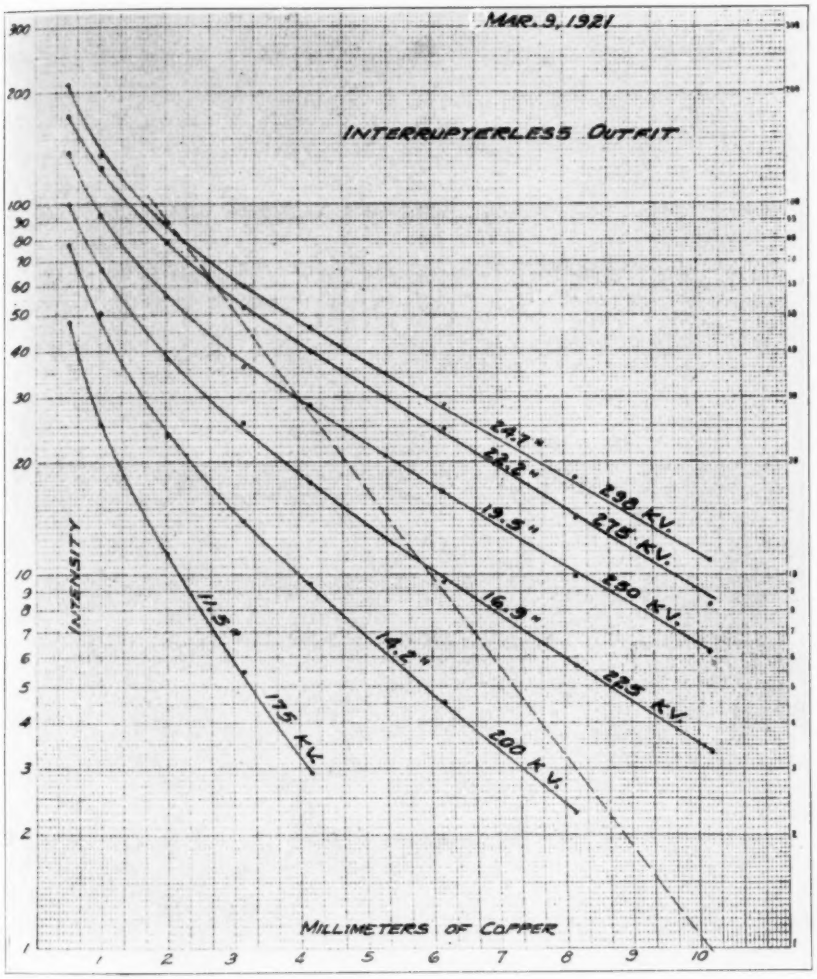

Fig. 7.—Absorption curves through copper filters.

higher voltage and larger port of entry is, therefore, effective in increasing the percentage depth dose.

Roentgen-ray tubes and generating apparatus are now available for operation at voltages of 200,000 and some experimental work has been done at voltages of 300,000. The tube developed for this work is of

the hot cathode type with solid tungsten target, similar to that used at lower voltages except that the bulb is slightly larger and the arms somewhat longer, to prevent arcing along the surface of the glass. Experience has shown that these tubes operate most satisfactorily when excited from a high tension transformer with mechanical rectifier, or from a constant potential continuous current machine.

As previously stated, the recent work of Ellis in England shows that we should get, at 400,000 volts, radiation similar to the gamma

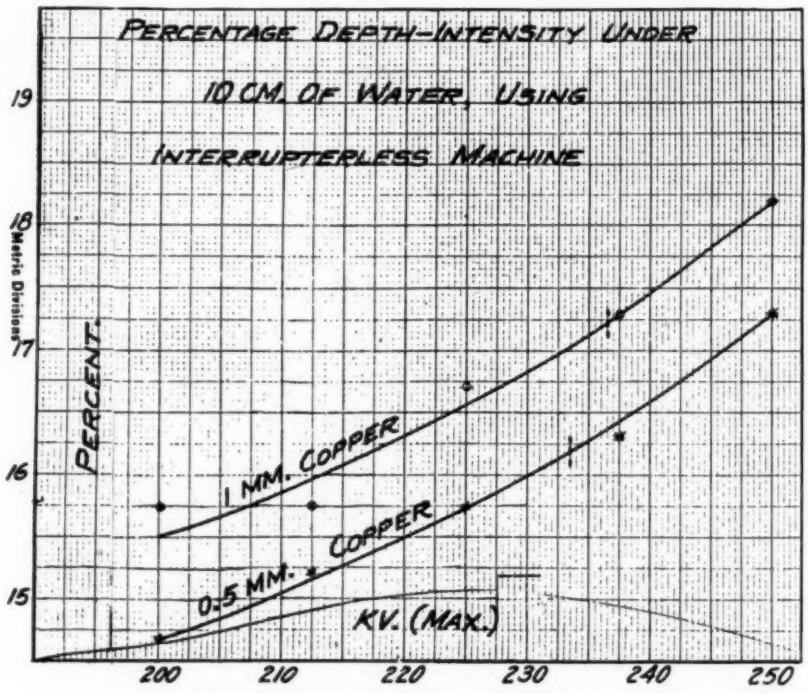

Fig. 8.—Percentage depth dose beneath 10 cm. of water.

rays of Ra-B, and at 3,000,000, radiation similar to the gamma rays of Ra-C. Though we may not be able to go to 3,000,000 volts, we may well be able to go high enough to increase materially the amount of roentgen-ray energy which can be transmitted through different mediums.

CONCLUSIONS

1. Increasing the voltage applied to the roentgen-ray tube increases the intensity of the roentgen rays produced. The intensity of the more penetrating rays increases much more rapidly than that of the less penetrating rays.

2. At any definite voltage applied to the roentgen-ray tube, increasing the thickness of filter decreases the roentgen-ray intensity but increases the proportion of the more penetrating rays in the roentgen-ray beam beneath the filter.

3. With a definite thickness of any filter, increasing the voltage increases the ratio of depth to surface dose.

4. With a definite voltage and filter, increasing the target skin distance increases the ratio of depth to surface dose.

5. Increasing the size of the port of entry increases the ratio of depth to surface dose.

6. Roentgen-ray tubes and generating apparatus are available for operation at 200,000 volts.

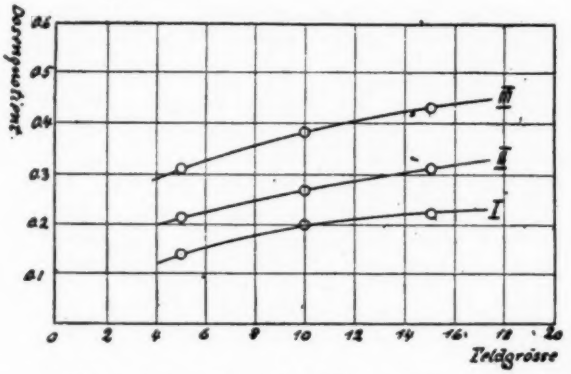

Fig. 9.—Effect of size of port of entry on percentage depth dose.

ABSTRACT OF DISCUSSION

DR. WILLIAM ALLEN PUSEY, Chicago: We are under obligations to the physicists for introducing waves of higher voltage and shorter wave length but deeper penetration. Anyone who said such things are not useful would be stupid, but I would call attention to the fact that for the present these are technical, physical problems rather than problems in therapeutics. There is undoubtedly a propaganda for the use of roentgen-ray apparatus to produce enormous voltage. Many factors are involved in that problem about which we are uncertain. It is undoubtedly true that when we get more familiar with the use of roentgen-rays produced by such high voltage we will be able to attack deep lesions with more intelligence than we can now. I would, however, point out that in undertaking to treat these lesions with this new method we are not working with more intelligence than we have had. I know in the old days, when we treated with the old gas tubes, we were able to produce appreciable effects in deep lesions. I am sure no one who has seen a myoma of the uterus treated by this method will doubt that we could produce deep effects then. With the new apparatus, we have to know how much effect we are producing and how much effect we are getting. There is considerable difference in the opinion regarding this—one that the effect is produced by the direct

voltage and the other that it is produced by the square of the voltage. We should keep an open mind and I think we are not yet in a position to be convinced that these enormous voltages are what we need. Recently I had the opportunity to see the work of Barlow with enormous doses of radium in animals. The deep effects produced in animals were exactly analogous with the effect produced on the skin by roentgen rays. They were so strikingly similar that you could almost use the one set of photomicrographs to illustrate the work. The chief thing that came to me in seeing this work of Barlow was the seriousness of an attempt to bombard a man's internals with this enormous penetration. I would not like to be regarded as undertaking to minimize the usefulness of the experiments presented today by Mr. Moore, but I would exercise the caution of a, perhaps, congenitally conservative man by saying that these questions before us are largely academic.

Dr. Harold N. Cole, Cleveland: I was much impressed with the fact that with a certain voltage, after you have used a certain amount of filter, no matter how much filter you use you get the same straight line of intensity. I should like to know about the amount of filter indicated with a machine with 60,000, one with 80,000 and one with 120,000 volts, respectively. This is a very important point and if you reach a certain amount of filter and no more will make any difference in the line, that is something we should know about.

Dr. F. J. Eichenlaub, Washington, D. C.: As dermatologists, I am sure that we have learned a great deal from this paper. I think the facts brought out by Mr. Moore demonstrate that the dermatologist will never need the 200,000 volt machine. Furthermore, the statement that filtration decreases the intensity is very interesting, because it strengthens the plea of Dr. MacKee that the rays we want in dermatology are the unfiltered rays. In dealing with basal cell cancer, acne, and other diseases of the skin for which we use the roentgen rays, we want the unfiltered rays which give the greatest intensity in the superficial tissues.

Dr. William H. Guy, Pittsburgh: As dermatologists, we are, of course, vitally interested in the physical properties of roentgen rays, and are in sympathy with all attempts to improve apparatus and technical details. However, the bulk of our pathology is very superficial and we use by preference unfiltered rays with moderate powers of penetration, using the minimum amount that will prove effective. Heavy dosage of highly penetrating rays may produce deep seated vascular changes that are not only unnecessary but are also likely to be productive of late undesirable results. By increasing the distance between the anode and the skin, one may reduce the enormous disproportion between surface and depth dosage due to divergence of rays. When additional penetration is desired, filters are indicated. I am rather skeptical as to the highly touted value of these very high voltage machines; certainly in dermatologic practice they are not needed.

Dr. C. N. Moore, Schenectady, N. Y.: Any discussion of the particular results obtained by the use of low or high voltage is, of course, entirely out of my province. The answer to the question as to what type of rays produce the best results should be left to the physicians who apply the rays. One point I would like to correct in Dr. Pusey's discussion, and that is the impression that you may have roentgen rays so penetrating that they are not absorbed at all in going through matter. It is a physical fact that roentgen rays of any kind are absorbed to a certain extent. A definite thickness of matter will absorb a certain percentage of the rays and the next equal thickness will absorb

the same percentage of those rays which were not absorbed in the first layer. In regard to Dr. Cole's question as to the proper thickness of filter to use at the various voltages employed in roentgen-ray work, it would depend on what intensity was desired beneath the filter. As you remember, the curves showing the relation between intensity and filter thickness for any definite voltage indicated that the intensity always decreased as the filter thickness was increased. The fact that the curves became straight lines beyond a certain filter thickness simply showed that further filtration did not change the quality of the roentgen-ray beam.

LUPUS ERYTHEMATOSUS ACUTUS DISSEMINATUS HEMORRHAGICUS *

REPORT OF A CASE

MOSES SCHOLTZ, M.D.

Dermatologist, Graduate School of Medicine, Los Angeles Medical Department, University of California, Los Angeles County and Kaspare Cohn Hospitals

LOS ANGELES

The following case is reported, both because of the extreme rarity of the condition, and because of the several interesting clinical features of the case. The case was referred to me by Dr. D. Edelman of this city.

REPORT OF CASE

Aug. 5, 1920, Mrs. C. M., aged 31, mother of two children, consulted her family physician about two red patches on the forehead and on the chest. She had noticed the patches for the first time two weeks before. They caused burning and itching and grew steadily bigger. She had also been complaining of weakness, severe headaches and of general ill feeling for the last six months. The family physician had found a large amount of albumin in the urine and had prescribed a general and dietetic regimen. He referred the patient for a dermatologic diagnosis.

Skin Findings.—The examination revealed a very sharply defined, acutely inflamed area, occupying the nasal bridge, descending symmetrically on both cheeks and presenting a typical bat-wing shape. The patches were not bright, angry red, but rather deep red and livid. They showed a very slight infiltration, with a greater turgescence at the border and a perceptible flattening of the central parts, which were paler and gave a suggestion of mild sclerosis or atrophy. The surface of the patches was rather greasy and smooth, showing fine dirty white tightly adherent branlike scales. An irregularly shaped square patch, about 2 by 3 inches (5 by 7.5 cm.), of the same clinical characteristics was found on the upper third of the sternum.

Physical Examination.—Examination revealed: head and neck: no exophthalmos, thyroid palpable but not enlarged, oral cavity presenting no abnormalities. Chest: heart of normal size, shape and position, heart tones clear and distinct. Lungs: definite right apical retraction and fibrosis, dulness to flatness, supraclavicular to fourth interspace; breath sounds exaggerated, bronchial blow with harsh inspiration; left base lung excursion restricted with a reduction of vesicular breathing; inspiration productive of cloudburst of crackling. Impression of the chest condition: chronic fibroid tuberculosis (quiescent), and left basal adhesive pleuritis. The abdomen was rotund; there was no distention, and fat was retained; no masses were palpable, and there were no tender areas on deep palpation; liver, kidneys, spleen were not palpable. Superficial and deep reflexes were present, but there was no Argyll Robertson pupil, nor ataxia.

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* Read before the Section on Dermatology and Syphilology at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

Laboratory Findings.—Examination of the blood revealed that bleeding time was normal and coagulating time greatly prolonged (Howell's method). Hemoglobin was 63 per cent., the red blood cells numbered 3,200,000, the color index was 0.95; the leukocytes numbered 5,200. Differential leukocyte count revealed: polymorphonuclears, 136 (68 per cent.); lymphocytes, 50 (25 per cent.); large mononuclears, 11 (5.5 per cent.); transitionals, 3 (1.5 per cent.); total, 200 (100 per cent.). The red blood cells were normal in size, regular in shape and took the stain evenly. No nucleated red blood cells or blood parasites were seen, and no abnormal leukocytes. Platelets diminished in numbers. The blood culture was sterile; the Wassermann reaction, one plus. Examination of the urine revealed a trace of albumin. Microscopic examination of centrifugalized sediment revealed numerous red blood cells, pus cells and numerous bacteria. No casts were found.

Diagnosis.—The morphology and localization of the lesions on the face were so typical of lupus erythematosus that no other diagnosis was seriously considered. There were three unusual features: (1) an acute development; (2) the presence of constitutional symptoms, and (3) the presence of a clinically identical patch in the region of manubrium sterni—a distinctly seborrheic location. For this reason the possibility of an atypical seborrheic dermatitis was entertained temporarily in spite of the absence of seborrhea on the scalp, except a slight dandruff. Two per cent. salicylic acid in Lassar's paste was given.

Clinical Course.—Two weeks later, I was again called to see the patient at her home. She was confined to bed, complaining of weakness and feverish spells at night. There was a considerable extension of the lesions of the face, forming large symmetrical butterfly-shaped areas of the classic type of lupus erythematosus, extending down on the cheeks and also on the forehead. Beyond the sharply defined borders of the main areas appeared numerous small, discrete, though not nearly so sharply marginated, maculopapular lesions, ranging in size from that of a hemp seed to that of a coffee bean. These lesions were dusky red and perfectly smooth, suggesting papular lesions of erythema multiforme type. A few days later, multiple lesions of the same type appeared on the right arm and on the following days successively on both elbows, gluteal regions, legs and other parts of the body. A few similar maculopapular lesions could be seen on the hard palate. The patient complained persistently of a burning sensation in the large patches on the face and sternum, but the disseminated lesions on the limbs and trunk did not cause any discomfort.

At this time, the large patches on the forehead, cheeks and sternum had undergone a most peculiar change. They had suddenly developed a diffuse oozing of a hemorrhagic character, not merely a blood serum, but what seemed to be pure blood. In fact, it was, clinically, a striking picture of a cutaneous hemorrhage spontaneously developed. Blood was oozing slowly, forming heavy hemorrhagic crusts. Bleeding could not be stopped by pressure, but it was easily controlled by 1:1,000 epinephrin ointment. Gradually, the patches on the face lost their originally sharply marginated borders, fused with disseminated maculopapular lesions and formed rather diffuse areas of erysipeloid hue, covering practically the whole face. Similar changes took place in the sternal patch.

The rash, as a whole, had attained its maximum; it remained stationary for a week, and gradually began to recede. During this time, the patient had irregular and intermittent elevations of temperature up to 102 F., which also gradually went down to normal.

The treatment consisted in the administration of quinin hydrochlorid, 5 grain capsules, four times a day, and 5 grain capsules of calcium lactate, four times a day, given at alternate hours.

By September 30, about two months after the appearance of the first patches, all skin lesions had cleared up completely. The patient improved sufficiently to be up and about, and I withdrew from the case, leaving the patient in charge of the family physician.

Subsequent History.—The attending physician reported that the subsequent course was unexpectedly rapid and dramatic. In spite of the apparent improvement, the patient did not recover completely. There were, as before, indefinite complaints with no other clinical findings but persistent albuminuria, red blood cells, pus cells and hyaline, granular and blood casts in the urine. At one time, small purpuric spots appeared scattered over the body. December 17, the patient became unconscious and died, with a typical picture of uremia. At the partial necropsy examination made by Dr. A. Zeiler, no active tuberculous lesions were found, but a well expressed pyonephrosis.

REVIEW OF THE LITERATURE

As the foregoing clinical report shows, this was a case of acute hemorrhagic disseminated type of lupus erythematosus with a fatal termination—a case in which no active tuberculous lesions were found and in which the only source of focal infection responsible for the whole symptomatology proved to be pyonephrosis.

Cases of this type are extremely rare. One of the earliest cases of lupus erythematosus disseminatus was reported by Hardaway,[1] in 1889. The patient, aged 26, having discoid patches of lupus erythematosus on the face for several months, developed bullae, after some irritating local medication fever, with hemorrhagic crusts, enlarged lymphatic glands, coma and acute tuberculous pneumonia, resulting in death. Fordyce,[2] in 1896, reported a case of a woman, aged 25, who, after having discoid patches on the face for many months, developed multiple similar patches, disseminated on arms and hands, at the beginning of pregnancy. At the end of pregnancy, the eruption cleared up, leaving behind atrophic marks.

Pernet,[3] in 1908, quoted a series of ten cases of lupus erythematosus acutus disseminatus reported up to date: among these were one case of his own, three reported by Kaposi, one by Boeck, one by Koch, two by Jadassohn, one by Short and one by Heath. Strangely, he does not mention the cases of Hardaway and Fordyce. Gray,[4] in 1914, reported a case of a young woman suffering with pneumonia who developed

1. Hardaway: J. Cutan. Dis. **7**:447, 1889.
2. Fordyce: J. Cutan. Dis. **14**:89, 1896.
3. Pernet: Etude Clinique, Paris, 1908, p. 135.
4. Gray: Brit. J. Dermat. **26**:356, 1914.

patches of lupus erythematosus with hemorrhagic bullae on the face and hands. After the resolution of pneumonia, the rash cleared up also, but reappeared later as ordinary discoid patches.

Ravogli,[5] in 1915, reported a case of lupus erythematosus of discoid type in which, after injections of 0.01 mg. of tuberculin, a disseminated form of lupus erythematosus developed with fever and early death from miliary general tuberculosis.

Barber,[6] in 1915, reported a case in which, after recurrent attacks of discoid patches for several years, the lesions spread acutely on the face, body and limbs, associated with elevations of temperature, up to 104 F. A pure culture of *Streptococcus longus* was obtained from the intestines. After the improvement brought about by sour milk treatment, no streptococci were found in the feces, only *Bacillus coli* and allied bacilli being present. Ijiri,[7] in Japan, reported, in 1915, three cases of acute lupus erythematosus disseminatus. Ehrman,[8] in 1917, reported the case of a soldier who, after an injection of infected tuberculin, developed disseminated acute erysipelas-like lesions on the face, trunk and limbs. The lesions developed later into chronic discoid patches.

Brown,[9] in 1917, reported the case of a boy, aged 11, in whom patches of lupus erythematosus appeared on the ears. Four weeks later, he developed fever and vomiting; the patches disseminated on the nose, cheeks, fingers and toes, and the gums bled. As the rash faded, the patient developed pneumonia, and died four days later. There was no tuberculosis in the family, and the tonsils had been removed three years before.

Several cases were reported in 1920. Highman[10] reported the case of a woman, aged 51, who had discoid patches of five weeks' duration. She developed erysipeloid areas on the face and hands, with elevation of temperature and prostration. The lesions were proved histologically to be lupus erythematosus.

An interesting case was reported by Low and Rutherford.[11] The patient had discoid patches on the face for years; she also had pyorrhea and subacute nephritis. The skin lesions cleared up after the extraction of teeth and vaccine treatment, but recurred after each of four attacks of bronchitis which the patient had in four and a half years, with complete disappearance of the eruption between the attacks. In the sputum

5. Ravogli: J. Cutan. Dis. **33**:266, 1915.
6. Barber: Brit. J. Dermat. **27**:365, 1915.
7. Ijiri: Ztschr. f. Dermat. **15**: (July) 1915.
8. Ehrman: Wien. klin. Wchnschr. **30**:669, 1917.
9. Brown: New York M. J. **106**:931 (Nov. 17) 1917.
10. Highman, W. G.: Lupus Erythematosus Disseminatus, Tr. New York Dermat. Soc., Arch. Dermat. & Syph. **1**:227, (Feb.) 1920.
11. Low and Rutherford: Brit. J. Dermat. **32**:326 (Nov.) 1920.

were found streptococcus and staphylococcus. The patient died from intercurrent diphtheria. At necropsy, no active tuberculosis was found, but there were extensive chronic lesions in the lungs. Streptococcus was cultured from the blood.

Graham Little [12] reported a case in which discoid patches of seven months' duration on the nose spread all over the body, with elevation of temperature. Tuberculous glands were present. Whitfield [13] reported a case of acute lupus erythematosus with a fatal termination. The necropsy findings were negative. Sequeira [14] reported the case of a woman, aged 37, in which discoid patches appeared on the nose, covered its whole surface and then spread to other parts of the body, fingers and toes. On the hands were purpuric and hemorrhagic lesions; on the right calf appeared bullous lesions. The temperature was normal. There was no albuminuria. He cited another acute case, with a temperature of 103 to 105 F. Ormsby [15] cited two fatal cases of lupus erythematosus acutus (unpublished) with the lesions of erythema multiforme type scattered on the body. McLeod [16] recorded a fatal case of acute lupus erythematosus with nephritis. The eruption cleared up as the nephritis grew worse.

The analysis of the literature on the subject leaves an impression that many writers did not sufficiently differentiate between the acute and disseminated types of lupus erythematosus. A case may be disseminated but not necessarily acute. Many cases of disseminated lupus erythematosus run a chronic course throughout. They may develop from a discoid type or be disseminated from the start. They may also start as an acute disseminated type and run into a chronic discoid type. Such cases should not be termed acute disseminated lupus erythematosus. Only cases which start acutely, assume a disseminated form and run acutely throughout can be regarded as a pure type of acute disseminated lupus erythematosus.

From this point of view, the cases reported by Hardaway, Fordyce, Ravogli, Barber, Ehrman, Low and Rutherford, and Graham Little can hardly be considered as pure types of acute disseminated lupus erythematosus, but rather as a chronic disseminated type with an acute exacerbation. On the other hand, cases reported by Highman, Gray, Brown, Whitfield and Sequeira answer all qualifications of acute disseminated lupus erythematosus. The present case is the sixth of this class. In the remainder of the series of sixteen cases reported, the available data are not sufficiently detailed to determine their type.

12. Graham Little: Brit. J. Dermat. **32**:272, 1920.
13. Whitfield: Brit. J. Dermat. **32**:272, 1920.
14. Sequeira: Proc. Roy. Soc. Med. **13**:27 (Feb.) 1920.
15. Ormsby: Diseases of the Skin, Philadelphia, Lea & Febiger, 1921, p.698.
16. McLeod: Brit. J. Dermat. **20**:236, 1908.

As to the other salient features, out of twenty-seven reported cases of lupus disseminatus, seven terminated fatally, those reported by Hardaway, Short, Brown, Low and Rutherford, Whitfield, Ravogli and McLeod. The present case is the eighth fatal case.

As to the hemorrhagic lesions, they were present only in four cases of the series, those reported by Kaposi, Hardaway, Gray and Sequeira. The present case is the fifth.

PATHOGENESIS

The pathogenesis of lupus erythematosus is notoriously a controversial issue. It seems that the study of acute forms of lupus erythematosus would hold out a better promise to establish a definite pathogenesis. This has not been the case. The analysis of twenty-seven case reports cited in the foregoing shows a diversified pathogenesis.

One point has been settled; namely, that tuberculosis, regarded for a long time the sole or the main cause of lupus erythematosus, can be definitely excluded in many cases. It was present in the cases of Hardaway, Ehrman, Ravogli and Graham Little. On the other hand, in two fatal cases of acute lupus erythematosus cited by Torok, no tuberculosis was found at necropsy. In the cases of Cranston Low, Whitfield and Brown also, the necropsy findings were negative. Of twelve cases of disseminated lupus erythematosus reported by Jadassohn, only two showed active tuberculosis, and in two others it was inactive. Barber, in two of his cases, found focal streptococcic infection in the intestines in one and in the tonsils in the other. In Fordyce's cases, the outbreak was caused by pregnancy. Pneumonia was a factor in the cases of Shamberg, Gray and Brown.

The present case shows one pathogenic factor only—a pyogenic nephritis. It is of interest to note that nephritis in this case is not secondary to some local or general infection or toxemia, but is a primary lesion, responsible both for the skin lesions and for the fatal termination, and present in the clinical picture from the very start to the finish.

The theory of a multiple and diverse pathogenesis of lupus erythematosus has been advanced and accepted by several observers, among them Brooks, Jadassohn, Hartzell and Pusey. The study of the reported cases and of the present case strongly substantiates this view.

MORPHOLOGY

The morphology of the present case was extremely interesting. The initial patches on the forehead and the sternum were of the classic type of lupus erythematosus. The subsequent lesions which developed, when dissemination took place, were of maculopapular type, strongly suggesting generalized erythema multiforme.

For a while, the eruptive areas on the face strongly suggested an erysipeloid appearance in the color of the general configuration, the only difference being that the involved area did not show one solid uninterrupted surface, but a confluent one, of many small ill defined patches separated by small interspaces of normal skin. The papular lesions on the trunk and limbs were characteristic of the fugaceous small papular type of toxic exudative erythema multiforme.

It is of interest to note that the skin lesions cleared up completely with the subsidence of the acute attack and that no other skin lesions, with the exception of small scattered purpuric macules, developed later when the case entered its grave and ultimate stage. Apparently, the skin lesions of lupus erythematosus in the present case were merely a temporary and incidental feature of the whole clinical picture of pyogenic toxemia.

The most striking morphologic feature of the case was a hemorrhagic exudate that developed on the initial patches on the face and the sternum at the acme of the acute stage. The exudate was diffuse, capillary, purely hemorrhagic, of bright arterial character. It was, apparently, due to intense vascular engorgement and was associated with a marked subjective feeling of burning. It did not yield to pressure but was easily controlled by epinephrin ointment. It presented a perfect picture of diffuse cutaneous hemorrhage. Hemorrhagic lesions in the form of vesicles, bullae and purpuric macules were recorded by Kaposi, Hardaway and Gray and, as purpuric and discrete hemorrhagic lesions, by Sequeira, but I did not find any references to diffuse hemorrhagic lesions, as in the present case.

LUPUS ERYTHEMATOSUS VERSUS ERYTHEMA MULTIFORME

In correlating and interpreting the fact that the initial patches are of typical discoid type of lupus erythematosus, and that subsequent disseminated lesions strongly suggest papular erythema multiforme type, two modes of explanation present themselves as the most plausible. The first is that, in certain cases reported as lupus erythematosus acutus disseminatus, the two conditions of lupus erythematosus and of erythema multiforme, induced by different pathogenic factors, were two independent clinical entities, merely coexisting in one person, without any pathogenetic relationship and only apparently merging into one clinical picture. In other words, we may assume that erythema multiforme has been superimposed by an intercurrent infection or toxemia on lupus erythematosus, and that in such cases erythema multiforme may overshadow, disguise and even modify the original discoid patches of lupus erythematosus. This assumption is particularly plausible in cases in which, after the termination of intercurrent infection or toxemia, the lesions return to the original discoid type.

The other explanation of the morphologic transformation observed in these cases raises an important issue as to whether lupus erythematosus is a definite clinical entity or merely a certain clinical type of skin reaction potential of multiple etiology. This interpretation would closely link lupus erythematosus with erythema multiforme. As mentioned before, this point of view has already been voiced by Fordyce, Hartzell, Pusey and other writers, who point out the existence of borderline types between lupus erythematosus and erythema multiforme. The present case admits only the second interpretation. We cannot assume in this case an intercurrent infection or toxemia that has superimposed erythema multiforme on lupus erythematosus, since we have here only one pathogenic factor—pyonephritis responsible for all the symptoms and skin manifestations in the case.

What factor determines this morphologic transformation, and why disseminated lesions do not have the slightest clinical resemblance to the discoid patches, can be suggested only in a conjectural form. Possibly, the very intensity and rapidity of the pathologic process prevents lesions from developing into ordinary discoid type.

SUMMARY

1. The female sex is preponderant in cases of lupus erythematosus acutus.

2. Lupus erythematosus acutus may be due to focal infection from the kidneys.

3. Lupus erythematosus acutus may present lesions of diffuse cutaneous hemorrhages.

4. Skin lesions in lupus erythematosus acutus may clear up in spite of the unfavorable continuation of the systemic condition.

5. Acute lupus erythematosus is a herald of focal infection and calls for a thorough search for it.

6. Lupus erythematosus acutus is in close pathogenetic relationship with erythema multiforme.

7. A stricter differentiation should be exercised in reporting cases as lupus erythematosus acutus disseminatus. A case may be disseminated without being acute. Only cases which start acutely and run as such throughout should be termed lupus erythematosus acutus disseminatus.

DISCUSSION

DR. W. H. GOECKERMAN, Rochester, Minn: This case strikes at fundamental pathology responsible for dermatoses. Within the last few years I have seen two cases of acute disseminated lupus erythematosus come to necropsy. Both had been under the observation of a dermatologist and clinician for several months, and it was impossible to find any evidence of tuberculosis. An exploratory abdominal section was made because of the indefinite abdominal symptoms present, and even then we were unable to find any evidence of abdominal

tuberculosis; but at the postmortem examination both cases showed involved abdominal glands, and the organism was demonstrated definitely in smears. I was impressed with the fact that we could not clinically determine the presence of tuberculosis when only the abdominal glands were involved. Gennerich, within the last year, reported a case in which he found definite gland pathology, but he was not willing to say that it was tuberculosis. I kept these observations in mind and determined that on the first occasion I would attempt to treat a case along the line we were treating Hodgkin's disease, with deep roentgen-ray therapy. About six or eight months ago a case was presented that somewhat resembled that of Dr. Scholtz'. The patient had marked lesions in the mouth; his hair had practically all dropped out. A week after the first treatment he had decidedly improved. A few weeks later the symptoms had all disappeared, the hair had grown in and he had gained in weight. I heard from him last week, and he said that he was doing the chores on his brother's farm, and none of the cutaneous lesions had reappeared. As to whether we learned anything about the etiology of lupus erythematosus in this case, I would not venture to say; but I wish to call attention to the desirability of repeating this form of treatment in other appropriate cases.

Dr. Everett S. Lain, Oklahoma City: I am especially pleased to hear another confirmation of an opinion I have held since the work of Rosenow on focal infections, namely, that lupus erythematosus is also a result of focal infection. My attention was first directed to this relation by seeing a patient with both herpes zoster and lupus erythematosus. I have many times seen clinical evidence of this apparent relationship. I am trusting that some one may prove or disprove this theory. It is my opinion that lupus erythematosus is merely a skin reaction to a toxin, probably having various foci of pathogenesis.

Dr. William T. Corlett, Cleveland: The etiology of lupus erythematosus has been for many years the subject of controversy, and the prevailing opinion as to its causation has shifted from time to time, the latest being that it is due to the presence of one or more foci of tuberculosis. Before Dr. Stokes published his interesting and complete article on his findings in a number of cases I was inclined to the opinion, my clinical experience at least had led me to so believe, that lupus erythematosus was not associated with tuberculosis, because in the cases I had seen there had been no evidence, so far as I was able to determine, of an infection of tuberculosis—that is, generalized or marked tuberculosis. Dr. Stokes, however, led me to believe that there might be insignificant foci in various parts of the body that had been overlooked by the ordinary means of examination, and since reading his article I have sought more carefully for evidence of tuberculosis whenever lupus erythematosus presented itself. I have never been convinced, however, that it was the only cause of the disease, and I am glad to hear another view, a little broader it may be, set forth in regard to its etiology. I still feel, however, that the last word has not yet been said as to the etiology of lupus erythematosus.

Dr. Marcus Haase, Memphis, Tenn.: I recall the case of an elderly woman who had three attacks of acute disseminate lupus erythematosus. I saw her in the last attack and she had none of the fixed type of lesions. From the information I received from her physician, a general practitioner, I learned that the attacks had disappeared within from three to five weeks of their onset, and that they came on suddenly. When I saw her, she had lesions on the face, over the upper arms and on the chest. The family physician said that the lesions she had during this third attack could not be differentiated from those he had seen in the two previous attacks. This woman was suffering from

pyelonephrosis at that time and was under the care of an internist. What I wish to bring out is that if her two previous attacks were similar to the one she had at that time, then this case could not have been mistaken for a case of erythema multiforme, and while I am not positive of my diagnosis of acute lupus erythematosus, at the time I saw her it was my opinion that she had that disease.

Dr. William Frick, Kansas City, Mo.: With all our studies of lupus erythematosus we have not been able to find any direct connection between that disease and tuberculosis. It seems to me that the preponderance of opinion would be that it is a toxic condition, and I do not see why we should not have a toxic condition producing lupus erythematosus in a tuberculous case, whether of the lungs or elsewhere. This paper seems to confirm the belief that lupus erythematosus is due to a toxic condition and may be due to conditions other than tuberculosis, and at the same time it may develop in a patient with tuberculosis. In other words, it may be due to various causes.

Dr. Richard L. Sutton, Kansas City, Mo.: At present, we can divide these cases into two distinct types, the acute and the chronic. The acute is almost always, if not invariably, due to tuberculosis, and the chronic is a symptomatic manifestation of any one of a number of factors. For many years, I have shared the opinion of Drs. Chipman, Lain, Stokes, Highman and others, that focal infection plays an important part in the causation of many of the chronic cases, and I do not believe that any patients with chronic lupus erythematosus should undergo a course of treatment until this possibility has been thoroughly investigated. Hartzell has recently reported a case in which the removal of an infected tooth was followed by a spectacular disappearance of the cutaneous lesions, and many English observers likewise have called attention to focal infection as a probable etiologic factor in the chronic type of the disease.

Dr. Moses Scholtz: To me the point of interest was the morphologic relationship between lupus erythematosus and erythema multiforme. Here we had the typical lesions of lupus erythematosus superseded and modified by lesions of erythema multiforme. The question is, Were these both due to the same etiologic factor? In my opinion cases like this suggest that lupus erythematosus is not an independent clinical entity but merely a certain type of skin reaction; and I was glad to hear at least one opinion to substantiate this view.

NEW FINDINGS IN PEMPHIGUS VULGARIS

PRELIMINARY COMMUNICATION

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PRAGUE, CZECHOSLOVAKIA

Pemphigus vulgaris and the other clinical forms of the pemphigus group have so far had an obscure etiology. Neither the nervous and infectious nor the French toxic theories have been proved. Samberger's [1] new work on the lymphatic reaction brought a new light on this problem. It shows that the bullae in pemphigus being on a non-inflammatory basis are caused by hyperproduction of lymph which becomes accumulated in the epidermis (active lymphatic edema). Prof. Samberger says in his textbook: [2] "This active edema is brought on sometimes by the contraction of the blood vessels from a vasomotor irritation. The edema, however, cannot be produced by irritation of vasomotors; it results from the hypersecretion of the lymph. The hypersecretion of the lymph did not even in these cases result from a vasomotor irritation; it was incited by the oxygen starved tissues." And further: "In some cases, not in all by any means, the irritation of the vasomotors can become the indirect cause of them (urticaria, pemphigus)."

The serious condition of patients suffering from pemphigus suggests a serious internal disturbance, probably a disturbance of internal secretions.

What endocrine glands would first attract our attention? If we take for our starting point those cases caused indirectly by a vasoconstriction we logically come first to the suprarenals, as it is epinephrin that causes an energetic vasoconstriction.

In view of the fact that Samberger's theory presumes the correctness of Heidenhain's theory that the lymph is secreted by the blood capillaries, and the correctness of Mareš's hypothesis, which asserts that by hyperproduction of the lymph an organism provides a sufficient flow of blood and thus of oxygen, the possibility presents itself that epinephrin may cause a hypersecretion of the lymph not only indirectly through the vasomotors, but also directly by increasing the secretory capacity of the blood vessels.

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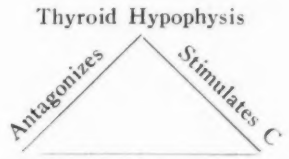
1. Samberger: Das Menschliche Oedem, Arch. f. Dermat. u. Syph., 1921. No. 132, p. 42. Die lymphatishe Hautreaktion, Wien. klin. Wchnschr., 1918.
2. Samberger: Vseobecna dermatologie. II vyd. Praha. Unie, 1920.

A hyperadrenalinemia would be the cause of the trouble, and naturally there would be other evidences of its existence. Experimentally, little is known about the effect of repeated small doses of epinephrin. Other experimental facts show a series of effects of epinephrin from which it is possible to construct a theoretical picture of the disease caused by hyperadrenalinemia, little known clinically, and observed at most in the course of pluriglandular syndromes.

The main changes can be expected in functional disturbance of other endocrine glands. For the basis of our consideration can be taken the Eppinger-Falta-Rudinger scheme, modified by Aschner, and well founded experimentally and clinically, in spite of the fact that some have lately doubted its correctness (Weil).

Blum, in 1901, after an injection of epinephrin noticed glycosuria. Hyperglycemia is also known. We can, therefore, expect glycosuria or hyperglycemia as a result of a functional disturbance of the pancreas. Judging from the scheme, we can further expect hypovarism, loss of menses, thinning of regional hair, and finally hyperthyroidism, clinically manifested by thick hair, nervousness and tremor. Perhaps even premature grayness would occur.



Ovary Pancreas Parathyroid antagonizes intensely (Chromaffin system).

Of the other experimental facts, the most interesting is the effect on the thermal regulation, on blood and blood circulation. It is known that after an injection of epinephrin the temperature of hibernating animals rises rapidly. Following repeated small doses we could expect an at least subjective internal sensation of warmth, accompanied by thirst; externally, however, there would be rather a sensation of cold, due to vasoconstriction.

The blood picture changes (Port-Brenow [3])—the number of white corpuscles increases with a relative increase in the number of polymorphonuclear leukocytes and a decrease of lymphocytes. So far as the blood circulation is concerned, no definite conclusions can be made. Any effect on the blood pressure under physiologic conditions has been denied (Gley [4]); nevertheless, a rise rather than a fall can be expected. Also, the effect on the kidneys is yet under discussion, and the relation between renal sclerosis and hyperadrenalinemia is doubtful (Volhard).

3. Port-Brenow in Weil: Innere Sekretion, Berlin, Springer, 1921.

4. Gley in Langlois, I. P., and Binet, L.: Presse méd., 1922, No. 18, p. 195

From this brief sketch of an assumed, clinically unknown disease, it appears that it is a chronic and serious condition, and also that many of the expected symptoms—deduced from the cited points of view—have not been observed as yet in pemphigus.

AUTHOR'S CASES

After a careful clinical examination of two patients, Mrs. H., 52 years old, and Mrs. I., 51 years old, we discovered many of the expected symptoms: the sensation of thirst, thick hair, thin regional hair and sensation of cold on the skin. Menses ceased at the age of 42 in the first and at the age of 48 in the second patient.

In the case of Mrs. H. the disease started in July, 1921, but she had felt weak since Christmas, 1920, and although she had never before perspired, a striking perspiration began. At present her skin is dry, fairly oily, with bullae all over the body. The skin is pale except in places of healed bullae which are pigmented.

Mrs. I. had a sudden onset at Christmas time, 1921, with blisters in the mouth. She had few but large bullae, especially over the abdomen and lumbosacral region. Her skin was dry, pale and fairly oily. Bullae healed with pigmentation. Both patients had ischuria and urinated twice daily from 500 to 600 c.c. in twenty-four hours. Metabolic investigation by Bang-Frejka's method revealed sugar in the blood (Mrs. H., 0.139 per cent., Mrs. I., 0.131 per cent.). A test for sugar in the urine was negative.

Judging from that fact, I presumed that the function of the pancreas was impaired, and expected a positive Loewi eye reaction. It was positive. Mrs. H. had a strong mydriasis, Mrs. I. a slightly less marked but definite mydriasis. Carried on with the patients' own serum, the reaction proved that the serum contained epinephrin, and at the same time it demonstrated the hypofunction of the pancreas. The Meltzer-Ehrmann test showed analogous results. Mrs. H.'s serum caused a definite mydriasis in the frog's eye; in the other case mydriasis was only slight if not doubtful. It is impossible to draw any quantitative deductions from this inexact reaction, but the difference in the degree of mydriasis, parallel in the two cases, proves that it was caused by the same substance—undoubtedly epinephrin.

The Leaven-Trendelenburg test was impracticable, owing to the fact that the venules of hibernating frogs were too narrow to allow the introduction of a cannula without thrombosis, so that the presence of hyperadrenalinemia was not directly proved.

The fact that patients with pemphigus showed a marked clinical improvement under the influence of diacetylamidoazotoluene (dimazon)

ointment, and that new bullae did not appear enabled us to carry on a test for epinephrin glycosuria and glycemia and to ascertain whether a theoretically expected clinical aggravation would take place. To start with, we injected intradermally 0.2 mg. of 1 per cent. epinephrin solution to prevent an eventual severe reaction. Resulting urticaria was quickly absorbed; the surrounding skin became anemic; wheals did not form either at the point of injection or around it. A hypersecretion of the lymph from the contraction of the capillaires, from the starvation of the organism for oxygen, could be ruled out. Is there a possibility of direct influence on the secretion of the capillaries?

The injection of 1 mg. of 1 per cent. epinephrin solution caused in Mrs. H. a rise in blood pressure from 115 to 120, and in pulse rate from 108 to 120, with a maximum the tenth minute; moderate palpitation, mydriasis; sugar in the blood, before, 0.188 per cent., after one-half hour and four hours the same (!), sugar in the urine negative. The patient felt weak, even on the second day. Toward evening the first vesicles appeared and on the third day there was an abundant new crop all over the body in spite of constant applications of diacetylamidoazotoluene ointment. The clinical aggravation lasted over fourteen days.

Mrs. I.'s blood pressure rose from 105 to 125, her pulse from 98 to 110, with a maximum in twenty-five minutes; after ten minutes there were palpitation, tremor and mydriasis; sugar in the blood, before, 0.132 per cent., after two and one-half hours 0.377 per cent. (!); sugar in the urine was 0.2 per cent.; she urinated seven hours after the injection. The patient felt very weak for three days. Beginning with the second day, the erosions wept profusely for sixteen days, although dimazon ointment was applied. No new bullae and no edema of the ankles occurred.

Theoretical reasoning caused me to expect an early rise of sugar content and a slow decline. That explains the error made in the first case, in which the blood was taken after one-half hour and then after four hours only, so that the rise of sugar was missed altogether. In the second case one test only was made in the usual time—after two and one-half hours. In the first case, with a greater hyperadrenalinemia (Mrs. H.), there was a lesser reaction; in the second case, with lesser hyperadrenalinemia, there was greater reaction; in both there was a striking increase of lymphatic reaction and an aggravation of the general condition.

The patients were put on a milk diet and fourteen days after the epinephrin injection, a glucose test was made. One hundred and fifty gm. in 500 c.c. of water were administered after breakfast without sugar. Mrs. H. vomited 160 c.c. and retained only about 100 gm. of glucose. Results by the Maclean method were:

Mrs. H., before the test: 0.118 per cent., urine negative; after one hour 0.143 per cent., after two and one-half hours 0.1 per cent. (technical error), after four hours 0.134 per cent.; first urination after nine hours, sugar negative. The maximal rise was missed; a slow decline is evident.

Mrs. I., before the test: 0.131 per cent., urine negative; after one hour 0.187 per cent., after two hours 0.208 per cent., after four hours 0.134 per cent.; sugar after nine hours, 0.15 per cent.

The slow decline of sugar is striking and analogous to diabetic curves; the rise, however, is lower and resembles the curves observed in exophthalmic goiter by Rosenberg. It shows a lowered assimilation limit for carbohydrates, as in hyperthyroidism.

On milk diet, the nitrogen content in twenty-four hours was found to be: Mrs. H., 3.82 gm., 600 c.c. of urine, specific gravity 1.015; Mrs. I., 7.20 gm., 551 c.c. of urine, specific gravity 1.016—a considerably reduced nitrogen elimination in the first, and a moderate one in the second case. In the blood serum: Mrs. H., 42 mg. per 100 c.c.; Mrs. I., 40 mg. per 100 c.c., also a reduction. It is impossible to draw any conclusions. An attempt at nitrogen balance (in the food and in the urine) would be more enlightening. Both patients tolerated meat rather poorly, and mastication was difficult on account of mouth lesions.

A water test (one and one-half liters of tea being used) showed a normal renal permeability for water. The stools showed partially digested muscle fibers and a few fat globules. Urine diastase tested by the MacKenzie-Wallis method was normal (20-26 units). The results would point, then, toward a hypofunction of the internal secretion of the pancreas and a lowered trypsin secretion, while lipase and diastase were normal.

Blood Picture: Few eosinophils—Mrs. H. 0.33 per cent., Mrs. I. 0.5 per cent.; Mrs. H.: red cells 4,200,000, white cells 9,200, polymorphonuclears 69.33 per cent., lymphocytes 22.67 per cent. Mrs. I.: red cells 2,060,000, white cells 10,200, polymorphonuclears 82 per cent., lymphocytes 10.5 per cent. These findings would also agree with those of a hyperadrenalinemia. According to the findings both cases present a disturbance of internal secretions, characterized by hypopancreatism and hyperthyroidism, with a great probability of hyperadrenalinemia and hypovarism.

The disturbance is a mild one in every respect, and its functional character is well in accord with the usual negative necropsy findings. The facts bear out the theoretically deduced correlations. We had further to ascertain whether some known experimental facts are not at variance with the hypothesis that epinephrin increases the secretory capacity of the blood capillaries.

Camus, in 1904,[5] demonstrated that epinephrin increases the lymph flow in his experiment on the thoracic duct, from which a larger amount of lymph was escaping after an injection of epinephrin. The presence of hyperglycemia might cause an objection, as the sugar in the blood might be considered the real cause of the increased amount of lymph. The sugar should be classified as one of Heidenhain's lymphagogues of the second degree, which increase the amount of lymph by abstracting the water from the tissues. How could we, however, explain the fact that after the administration of epinephrin, edema develops, as it did in the case of Mrs. I., if not by the presumption that lymph is produced in a large amount by the capillaries and that its outflow is hindered?

That epinephrin is not a lymphagogue of the first degree was proved by Biedl, who in his series of experiments with injections of extracts of crawfish muscle and other lymphagogues never obtained a glycosuria when epinephrin was injected. Judging from this experiment, the authors conclude that lymphagogues of the first degree are antagonists of epinephrin in their effect on the pancreas (Ev. the liver).

Equally well founded seems the explanation that not the lymphagogue but the secreted lymph is the real antagonist, as was demonstrated by another experiment of Biedl. Epinephrin did not cause glycosuria (in dogs) if from 80 to 100 c.c. of lymph were previously injected. Biedl says that internal secretion of the pancreas, contained in the lymph, counteracts epinephrin, a fact that cannot be disapproved experimentally, except probably by injecting the lymph of a depancreatized animal (dies soon) into another one of the same species.

If the hypothesis that lymph itself counteracts the effect of epinephrin on the liver is correct, we can judge from it, as well as from the assumed effects of epinephrin on lymph secretion that epinephrin regulates the production of the lymph, and the lymph regulates the effect of epinephrin on the liver (and possibly other organs). In other words, epinephrin thus automatically prevents an increase of its own amount over the degree necessary to life.

Viewed from this standpoint, the formation of bullae in pemphigus vulgaris appears to be a disturbance of internal secretion, an expression of a defensive reaction on the part of the organism against epinephrin autointoxication (toxemia). Increased lymphatic reaction following the injection of epinephrin in our patients makes this presumption probable.

Therapy that would prevent the formation of epinephrin or counteract this action would furnish a clinical proof. Epinephrin production

5. Camus in Lucien, N., and Parisot, I.: Glandes surrénales, Paris, 1913, p. 214.

can be limited (only temporarily, as compensation soon takes place) by operative removal of a suprarenal or by impairment of the medullary portion by the roentgen ray. The condition of the patients rules out the first procedure. The second should be used only when there is no other possibility, as Stephan [6] showed recently that doses controlling the action of the medulla destroyed completely the cortex, which is very sensitive. A damage to the cortex would result in a still greater production of sugar from glycogen. The splendid work of Ioshitomi Tokumitsu [7] demonstrated that the cortex and the pancreas are synergists. There is another possible procedure. H. H. Dale [8] proved that an alkaloid isolated from Secale cornutum, ergotoxin, counteracts the effect of epinephrin on the organs innervated by the sympathetics and also on the blood vessels. The question remains, however, whether the minute doses permissible in men, 0.05-0.13 mg., would be therapeutically efficient. In animals, poisoning with ergotoxin prevented the action of epinephrin. Dixon [9] obtained similar results with apocodein in doses of 0.02 gm. It has the disadvantage of acting as a purgative, thus abstracting water from the organism. Further findings and results will be announced later.

SUPPLEMENT

The glucose test was repeated in the case of Mrs. H. and 50 gm. were given. Sugar in the blood before the test was 0.105 per cent., after one-half hour 0.157 per cent., after one hour 0.131 per cent., and after two hours 0.108 per cent. Sugar in the urine after three-quarters of an hour was weakly positive, after one and one-half hours, strongly positive.

Clinically, there were at the same time many bullae. In former tests the sugar had not been found in the urine, probably because a catheterized specimen was not obtained (on account of the lesions on the genitals), and after several hours sugar concentration in the urine was slight.

The epinephrin test was repeated in the case of Mrs. I. (0.6 mg.). Sugar in the blood before the test was 0.131 per cent., after one-half hour 0.174 per cent., after one hour 0.170 per cent., after two hours 0.134 per cent., and after three hours 0.131 per cent. Sugar in the urine was positive after one hour. Blood examination showed at the

6. Stephan: München. med. Wchnschr., 1922, No. 10, p. 339.

7. Tokumitsu, Ioshitomi: Mitteil. aus. d. pathol. Institut der Kais. Univer. zu Sendai, Japan **1**:161, 1921.

8. H. H. Dale in Schafer, E. Sharpey: Les glandes à secretion interne, Ed. 2, Paris, O Doin, 1921, p. 95. For other references see Beidl: Innere Sekretion, III. Aufl. Wien., 1916, Urban 1 and Schwarzenberg.

9. Dixon in Schafer: Les glandes à secretion interne.

same time before and after injection 1 per cent. eosinophils, although the white cells, especially the lymphocytes, increased considerably.

Mrs. H. showed a striking change in her general condition and many bullae; she had 22 per cent. eosinophils with a decrease in neutrophils; sugar diastase increased to 50 units.

In general, these tests corroborate our former results. In regard to Bauer's work, we intend to test the uric acid of the blood and urine by the bromhydrate method.

The latest literature brings three interesting communications: Trendelenburg has proved that epinephrin disappeared in the arterial capillaries and thought it was under the effect of some ferment.[10]

Pulay has found hyperglycemia in urticaria.[11]

Vallisnieri and Coli [12] have found that the serum of patients with pemphigus has a weak effect on the suprarenals and none on other organs.

The whole conception remains a hypothesis; either the success of suggestive treatment or the results of pathologic and histologic examinations of necropsy specimens will bring the solution. This hypothesis helped us to discover the new facts and if it does not accomplish any more, it will have done its duty.

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10. Zentralbl. f. Herzkrankheiten, 1921, p. 7.
11. Klin. Wchnschr., 1922, No. 9.
12. Biochem. e. terap. speriment., 1921, No. 7.

Abstracts from Current Literature

THE EARLY MANIFESTATIONS AND RATIONAL TREATMENT OF TABES DORSALIS. H. F. Stoll, Am. J. M. Sc. **163**:723 (May) 1922.

Particular stress is laid on the points of physical examination, especially emphasizing the Argyll Robertson pupils, diminished or absent knee reflexes, areas of anesthesia and tabetic pains. Blood and spinal fluid examinations should also be considered carefully in arriving at a diagnosis. The usual mercury and arsphenamin courses of treatment are recommended with intraspinal treatment if improvement does not follow, using the original Swift-Ellis method.

ALASTRIM OR KAFFIR MILK POX. L. M. Moody, Ann. Trop. M. & Parasitol. **16**:21 (March) 1922.

A description is given of an eruptive fever called alastrim which occurred in Jamaica as an epidemic from May, 1920, to March, 1921. After an incubation of from ten to fourteen days the disease developed abruptly with pyrexia, headache and backache, followed in three or four days by an eruption of papules which soon changed to vesicles and pustules.

The areas involved, the temperature curve and the general symptomatology closely resemble variola.

Patients previously vaccinated had cases of a milder type, and the opinion is given that alastrim and vaccinia belong to the same group but are slightly different as one disease almost completely immunizes against the other.

CLINICAL CALORIMETRY XXX. METABOLISM IN ERYSIPELAS. W. Coleman, D. P. Barr, E. F. Dubois and G. F. Soderstrom, Arch. Int. Med. **29**:567 (May) 1922.

Ten experiments showed an increase in metabolism of from 19 to 42 per cent. above the average normal, this increase being roughly proportional to the degree of fever. The regulation of body temperature is similar to that observed in malaria during high continuous fever, and no specific differences were found between the metabolism in erysipelas and in typhoid fever, the protein metabolism being greatly increased in both.

Jamieson, Detroit.

SKIN IRRITANTS: EXTERNAL AND INTERNAL. C. G. Lane, Boston M. & S. J. **187**:108 (July 20) 1922.

Six hundred records of the Massachusetts General Hospital Out-Patient Skin Department in which there was a diagnosis of dermatitis or dermatitis venenata were studied. Ten per cent. were due to exposure to woods and plants, 20 per cent. to the applications of medicinal agents and 11 per cent. to industrial factors. This group includes cases from accidental contact with irritating substances, also cases in which substances are applied with intent to deceive. Skin eruptions from ingestion of food and drugs are referred to. Case reports of various groups are cited.

Pusey, Chicago.

A NOTE ON GENERAL PARESIS AT THE DANVERS STATE HOSPITAL. H. M. WATKINS, Boston M. & S. J. **187**:137 (July 27) 1922.

From 12 to 17 per cent. of all admissions to this state hospital for the insane show evidence of syphilis in some form. Sixty-seven cases have been studied and routine treatment outlined. Twenty per cent. are able to "carry on" outside the hospital by the aid of the social service department, and 77 per cent. of those in the hospital are able to do some form of useful work.

LANE, Boston.

CASE OF ERYTHROEDEMA (THE "PINK DISEASE"): AND THE QUESTION OF ACRODYNIA ("EPIDEMIC ERYTHEMA"). F. PARKES WEBER, Brit. J. Child. Dis. **19**:17 (Jan.-Mar.) 1922.

The author refers to a case which he has lately reported (abstract, ARCHIVES DERMATOLOGY AND SYPHILOLOGY **4**:708 [Nov.] 1921) as "A Condition Resembling Lupus Pernio in a Child." That title well describes the appearance of the child's extremities, but other features have suggested that the condition might better be classified as "erythroedema," ninety-one cases of which have been reported in Australia. Subsequently, Weston (*Arch. of Pediat.* **37**:513, 1920) reported eight cases; Byfield (*Am. J. Dis. Child.* **20**:347, 1920, abstr., ARCHIVES DERMATOLOGY AND SYPHILOLOGY **3**:659 [May] 1921) has described a series of seventeen; Emerson (*J. A. M. A.* **77**:285, 1921, abstr., ARCHIVES DERMATOLOGY AND SYPHILOLOGY **4**:546 [Oct.] 1921), Cartin and Zahorsky have also reported cases. In America, this affection has been called "acrodynia." A really fitting name is yet to be found; the author is of the opinion that "acrodynia" is a poor one, for it alludes to only a single symptom of the complex.

The patients are usually under 4 years, and the symptoms, which usually last about two months, include irritability, muscular asthenia, mental changes and an erythroderma of the extremities and often of the face as well, desquamating frequently and with an ill-defined border (differing thus from the eruption in pellagra, as well as by its predilection for the palms and soles). It is not known whether the cause is a fault in nutrition or whether the condition is an infectious neuritis, possibly postinfluenzal.

DERMATOPOLYNEURITIS (ACRODYNIA: ERYTHROEDEMA). H. THURSFIELD and D. H. PATERSON, Brit. J. Child. Dis. **19**:27 (Jan.-March) 1922.

In a female child, aged 1 year, a typical picture of the syndrome described in the foregoing abstract appeared, of six weeks' duration. Acute intussusception brought the case to necropsy, where no gross abnormality could be found. In a second case, that of a child, aged 18 months, the temperature varied between 98 and 104 F.

PARKHURST, Toledo, Ohio.

A CONDITION SOMEWHAT RESEMBLING LUPUS PERNIO IN A CHILD. SEQUEL: QUESTION OF ERYTHRO-EDEMA (THE "PINK DISEASE") AND ACRODYNIA ("EPIDEMIC ERYTHEMA"). F. PARKES WEBER, Brit. J. Dermat. & Syph. **34**:111 (April) 1922.

Describing a case demonstrated before the Dermatological Section of the Royal Society of Medicine on April 21, 1921, in which the patient exhibited circulatory deficiency of the extremities and ulcerations of feet, hands and

nasal septum, Weber states that the condition at that time might have been termed "acrodermatitis chronica mutilans." Acting on the suggestion of Sequeira that the case might be a severe form of erythro-edema, Weber investigated the subject, and he concludes that that diagnosis was correct. He then reviews the literature of erythro-edema by Australian authors and of acrodynia by American authors, and concludes that the two diseases are in all probability identical. Weber's case resembled closely Byfield's cases in his paper on "A Polyneuritic Syndrome Resembling Pellagra-Acrodynia Seen in Very Young Children."

BRIEF NOTES ON EPIDERMOPHYTON RUBRUM, CASTELLANI, 1909 (TRICHOPHYTON PURPUREUM, BANG, 1910) AND TRICHOPYTON VIOLACEUM VAR. DECALVANS, CASTELLANI, 1913, WITH REMARKS ON "ECZEMA MARGINATUM" ("TINEA CRURIS SEU INGUINALIS") IN JAPAN AND "LA LI TOU" OR "PARASITIC FOLLICULITIS" ("TINEA DECALVANS" PRO PARTE) OF SOUTHERN CHINA. M. Ota, Brit. J. Dermat. & Syph. **34**:120 (April) 1922.

Following investigation of cases seen in Japan and Manchuria, Ota concludes that the commonest type of tinea cruris seen in those countries is due to *Epidermophyton rubrum*, Castellani, 1909. In his examination of three cases of Chinese "la li tou" *Achorion schoenleini* was isolated twice and *Trichophyton violaceum* var. decalvans once, and the writer concludes that the Chinese term covers at least two diseases, favus and "tinea decalvans" of Castellani.

CASE OF SCLERODERMA (SCLERODACTYLY TYPE) WITH ADRENAL INSUFFICIENCY. J. H. Sequeira, Brit. J. Dermat. & Syph. **34**:124 (April) 1922.

Sequeira reports the findings in a case of extensive scleroderma in which exhaustive investigations were made. The blood pressure showed a great increase following injection of epinephrin, and Sequeira says that this is incontestable evidence of suprarenal inadequacy. He proposes grafting suprarenal tissue into the patient, and expects to report his results at an early date.

PRIMARY EPITHELIOMAS OF THE SKIN. J. Darier, Brit. J. Dermat. & Syph. **34**:145, 1922.

In this paper Darier discusses the question of the relative malignancy and the sensitiveness to radiotherapy of the different types of skin cancer. He confines himself to three types, the prickle cell and basal cell epitheliomas and a third type, which he styles the metatypical. After reviewing briefly the clinical and histologic findings of the first two types, he discusses the third type in detail, saying that it has not been described previously.

He says that this third type constitutes from 10 to 15% of the cases of epithelioma. It is usually seen on the face, and notably on the nose, but it also occurs on the scalp, neck and in other locations. Clinically it is difficult to distinguish from the basal cell epithelioma, and its nature is often suggested because of its resistance to radiotherapy. It usually begins as a grayish red, rather soft and translucent appearing projecting tumor; but sometimes it appears as an erosion or as a destructive and mutilating ulcer. Its development is more rapid than that of the basal cell type, but it may remain sta-

tionary for some months or years and then extend rapidly and produce deep ulceration. The lymph glands may become involved, and general metastases may occur.

Histologic examination is usually necessary to make an absolute diagnosis, and two types are seen microscopically. In both of these types, which are described fully, there are some features of both the basal and prickle cell epithelioma. Differentiation of this type is important because of the more serious prognosis in this form as compared to the basal cell epithelioma.

In a general way the author outlines the treatment of epithelioma as follows:

1. By complete and radical surgical excision: operable prickle cell and circumscribed metatypical epithelioma.

2. By radiotherapy: basal cell epitheliomas without deep invasion.

3. By intensive radiotherapy or radiopuncture: prickle cell epitheliomas which are not operable but completely accessible, also the deeply destructive basal cell or metatypical varieties.

HAEMATOGENOUS INFECTION IN TRICHOPHYTIA. E. Bruusgaard, Brit. J. Dermat. & Syph. **34**:150, 1922.

After reviewing briefly but comprehensively the clinical types and some experimental considerations of trichophytids, Bruusgaard discusses the possible sources of these eruptions. He feels that in most cases these exanthems must be considered of hematogenous origin, because of the acute form, the general symptoms, the symmetry of the eruption, etc.

He states that if we take the view that the exanthems are of hematogenous origin and due to trichophyton, we have to prove that the fungus can spread through the blood vessels to the skin. Hitherto efforts to cultivate the fungus from the blood or to discover it in sections of extirpated nodes or spots have been unsuccessful.

He then reports the case of a man, 68 years of age, suffering with kerion Celsi of the chin and submaxillary region, who developed an eruption of an erythema nodosum type on the forearm. They were able to demonstrate spores in a lesion excised from the arm, the organisms being found both in the tissue and in the blood vessels. *Trichophyton gypseum* from the lesions on the arm was identical with that grown from the lesions on the chin. This is, then, the first instance recorded in which hematogenous spread of trichophyton has been demonstrated.

PSEUDO-ALOPECIA AREATA, Haldin Davis, Brit. J. Dermat. & Syph. **34**: 162, 1922.

Davis described a condition in which children have exhibited patches on the scalp, to superficial examination resembling ringworm patches, but which fail to yield any stumps containing fungus. The affected patches are of small size, as a rule, and are covered with stumps, which characteristically are broken off very close to the scalp. Even when effectually seized they do not come out easily like the stumps in alopecia areata. On microscopic examination the chief point of interest is that the distal end of the stump is frayed out, and the hair is apparently split up into a number of bundles. In no case has there been more than one such patch on the head, and the patch has always been situated on the anterior part of the crown, or at the side, above and in front of the ear.

Davis believes that it is the scratching or rubbing of the spot by the patient which causes the breakage of the hair close to the scalp. They are thus in reality artefacts, not intentionally or even consciously produced. In support of this view he cites the nature of the stumps, the invariably single lesion, and the easily accesible site of the eruption. For this condition he suggests the name pseudo-alopecia areata, if it is advisable to give it any name at all.

With this idea in mind, Davis has reconsidered the outbreak of "epidemic alopecia areata" described by him as it occurred in an orphan asylum for girls, in 1914, and he thinks that the large number of cases seen at that time were cases of the factitious type described in the foregoing resulting from the effect of mass suggestion.

A NOTE ON THE USE OF FLAVINE-STARCH POULTICES IN ECZEMA. J. Ferguson Smith, Brit. J. Dermat. & Syph. **34**:166, 1922.

Smith recalls the common use (in Scotland particularly) of cold starch poultices for the treatment of acute dermatitis, but states that previously no antiseptics, except boric acid, have been used with it, because the older antiseptics will not be tolerated when used in a strength sufficient to make them effective. The flavines are, however, comparatively non-irritating in efficient strength, and their activity is enhanced rather than diminished in the presence of a serous discharge.

He has recently treated patients with severely infected "seborrheic" eczema of the head and groin with encouraging results, using the following preparation:

Four tablespoonfuls of rice starch and 10 grains (0.65 gm.) of acriflavine are mixed with a little cold water, one pint of boiling water is added, and the mixture is boiled with constant stirring until it thickens. When nearly cold it is poured on a dressing cloth so as to form a layer half an inch (12.7 mm.) thick. When quite cold and set it is covered with a single layer of gauze or butter muslin, and applied to the part. It is changed three or four times a day, and at each change the part is bathed with acriflavine 1:1,000 in 0.85 per cent. sodium chlorid. These applications should be continued until it is considered that more stimulating remedies may be safely applied.

CLINICAL AND HISTOLOGICAL STUDIES ON THE PATHOLOGICAL CHANGES IN THE ELASTIC TISSUES OF THE SKIN. A. Kissmeyer and Carl With, Brit. J. Dermat. & Syph. **34**:175 and 221, 1922.

Kissmeyer and With have studied the subject of pathologic changes in the elastic tissues of the skin from both the clinical and the microscopic aspects.

Detailed findings of changes occurring in various conditions are grouped under the following headings:

(1) Degeneration of newly-formed elastic tissue in scars.
(2) Elastic tissue degeneration in transplantation patches.
(3) Elastic degeneration in granulation tissue.
(4) Pseudoxanthoma elasticum.
(5) Yellowish color of skin from various causes.

As a result of their observations they conclude that the different clinical forms are not characterized by histologically different aspects, as stated by Arzt and Bosselini.

Different forms of elastic degeneration show themselves partly by a quantitative increase in elastin; as an irregularity in thickness, the fibers most often becoming thicker; frequently there appears a peculiar curling up of the elastic

fibers into balls. Simultaneously with this the elastin seems to show a greater inclination to break. With this is seen rarely a formation of amorphous masses of elastin. It is characteristic of all changes that they leave a narrow belt uninvolved under the epidermis. Only under this do the changes commence which occupy the papillary body and the upper part of the cutis, but they do not go deeper into this (except in pseudoxanthoma elasticum).

In senile degeneration the degenerative changes are often diffuse. In scars, either traumatic or inflammatory, the degenerative changes are most frequently localized. In pseudoxanthoma elasticum the changes are more strongly pronounced; the collagen bundles, in connection with the elastin, have formed small, sharply defined tumor-like formations, of which the main histologic characteristic is a strong curling up and granular necrosis of the elastic fibers and "elastorrhexis." The more deeply seated changes in pseudoxanthoma elasticum were possibly due to its development at an early age.

The elastic degeneration, produced by the continued influence of the weather over long periods on the parts which are exposed thereto and are especially susceptible on account of special structure, is found first and foremost in senile degeneration, but also in "presenility" in traumatic scars and in scars from transplantation and burns, just as after granulation processes, because the newly formed elastic tissue is less capable of resisting the factors mentioned.

The small elastomas and the elastic degeneration seen now and then in tuberculous and syphilitic lupoids must presumably be regarded as a further development of the degeneration process of the normal elastic tissue dependent on the inflammation and different from the slow degeneration of regenerated and therefore less resistant elastic tissue.

It has been tried before to discriminate between histologic types of elastic degeneration, but it is impossible because the histologic aspect may be identical in the different conditions and only contingent on the process.

To attempt a morphologic classification discriminating between diffuse and circumscribed forms is impossible, because the senile elastic degeneration is not always diffuse, and because pseudoxanthoma elasticum is sometimes circumscribed and sometimes diffuse.

The writers suggest the following classification on an etiologic basis:

1. Diffuse senile degeneration.

2. Presenile degeneration, no doubt of newly formed elastic tissue in scar from traumas, burns, transplantation, and after granulation processes, which is less capable of resisting the weather. Approximate to this group must be counted colloid-milium.

3. Pseudoxanthoma elasticum.

4. The small elastomas seen now and then in tuberculous and syphilitic lupoids, which presumably arise on a basis of an acute degeneration by inflammation, and as a further development of the degeneration of the normal elastic tissue which is found more or less pronounced in chronic granulation processes.

SYPHILIS OF THE TESTICLE CONFINED TO THE EPIDIDYMIS.

A. Reith Fraser, Brit. J. Dermat. & Syph. **34**:195, 1922.

Fraser reviews the subject of syphilitic involvement of the epididymis independent of testicular involvement, and cites numerous authorities to show that such involvement can occur. The time of involvement of the epididymis varies in wide limits—from two months to 18 years after infection—according to the literature, but the majority of cases occur during the early secondary period. An acute interstitial epididymitis and gummatous formation are the

two types recognized. The acute type has to be differentiated from gonorrheal epididymitis, while the chronic form has to be distinguished from chronic gonorrheal epididymitis, tuberculous disease or new growth.

Fraser then reports a case of syphilitic interstitial epididymitis occurring eighteen years after infection. The condition was bilateral, being acute on one side and chronic on the other. There was unilateral implication of the vas, but the testes, prostate and seminal vesicles were uninvolved. There was no other evidence of syphilis.

CLINICAL NOTE—LEUCONYCHIA STRIATA. KNOWSLEY SIBLEY, Brit. J. Dermat. & Syph. **34**:238, 1922.

A case of familial leukonychia is reported.

A CASE ILLUSTRATING THE ASSOCIATION OF VON RECKLINGHAUSEN'S DISEASE WITH DERANGEMENT OF INTERNAL SECRETION. ERNEST MALLAM, Brit. J. Dermat. & Syph. **34**:239, 1922.

This article contains the report of a case of von Recklinghausen's disease which the author feels is associated with a destructive tumor of the pineal gland. Many of the tumors disappeared following an attack of mumps associated with orchitis.

SENEAR, Chicago.

SYPHILIS OF THE LUNG. A. FRIEDLANDER and R. J. ERICKSON, J. A. M. A. **79**:291 (July 22) 1922.

This article deals only with the acquired type. The necropsy incidence is from 0.14 to 0.3 per cent. Pathologically, the commonest forms are fibroid induration and gumma. There are no distinguishing diagnostic features. Roentgenologic evidence is of some value but is not conclusive. In the presence of symptoms of pulmonary tuberculosis, with negative sputum and a positive Wassermann reaction, syphilis of the lungs may be suspected, and the patient may be subjected to intensive antisyphilitic therapy.

This report records the pertinent facts of six cases.

MICHAEL, Houston, Texas.

OBSERVATIONS ON THE POISONOUS NATURE OF THE WHITE-MARKED TUSSOCK-MOTH. H. H. KNIGHT, J. Parasitol. **8**:133 (March) 1922.

In cocoon hunters and also experimentally lesions resembling urticaria were developed with swelling, pain and sometimes fever, these symptoms lasting two or three days. It was found that barbed hairs located in prominent tufts on the dorsal surface of the caterpillar apparently became hooked in the pores of the skin and could be removed only with difficulty. The poison glands may not be fully developed until the larva is nearly full grown.

A mucilaginous pulp of purslane leaves was found to be an excellent palliative.

RADIUM THERAPY OF CANCER OF THE MOUTH AND THROAT. C. E. FIELD, N. Y. State J. M. **22**:121, 1922.

This is an interesting article containing valuable details of technic.

SOME STUDIES IN THE EARLY TREATMENT OF CONGENITAL SYPHILIS. T. G. GIVAN, N. Y. State J. M. **22**:127, 1922.

This is a valuable report of a series of infants and children treated at the Long Island College Hospital. It is demonstrated that the most important factor in the treatment of congenital syphilis is to begin treatment long before birth. Of twenty-seven cases in which the mother received energetic treatment during pregnancy, the infant gave a negative Wassermann test in twenty; in the remaining seven the Wassermann test was not taken. Of fifteen cases in which the mother received no treatment during pregnancy, the Wassermann test was positive in eleven; in only four of these was the Wassermann test changed to negative by postnatal treatment. The treatment recommended for the children is mercury by the mouth and by intramuscular injections, and also neo-arsphenamin intravenously or intramuscularly.

A CLASSIFICATION OF NEUROSYPHILIS WITH SOME REMARKS CONCERNING THERAPY. LEON H. CORNWALL, N. Y. State J. M. **22**: 316 (July) 1922.

The author makes a classification of varieties of neurosyphilis on the basis of the tissue involved—meningeal, vascular, parenchymatous, etc.—with illustrative cases. Good results were obtained with intraspinal therapy in certain cases in which intravenous therapy had failed. The author insists on the necessity of spinal fluid examination in all cases of syphilis.

WILLIAMS, New York.

CONCERNING THE NATURE OF BENIGN LYMPHOGRANULOMA. J. SCHAUMANN, Acta dermat.-ven. **2**:409 (April) 1922.

In the sputum of his Case 1 (described in the *Annales*, 1917, p. 375), the author has found the bacilli of bovine tuberculosis, as proved both morphologically and culturally, as well as by animal inoculation. He concludes that the syndrome of benign lymphogranuloma, including lupus pernio, Boeck's sarcoid and the erythrodermic form of benign lymphogranuloma (*Annales*, 1920, p. 561) is probably always the result of infection during childhood with the bovine tubercle bacillus, by way of the tonsils and respiratory tract rather than by way of the gastro-intestinal tract.

THE NEWER PRECIPITATION REACTIONS IN SYPHILIS. H. BOAS and B. PONTOPPIDAN, Acta dermat.-ven. **2**:419 (April) 1922.

The authors have done the third modification of Meinicke's reaction in 463 serums and sixty-three spinal fluids; they have tried the Sachs-Georgi reaction in 880 serums and seventy-two spinal fluids, using the second modification of the original technic. Serums from cases of tabes and paresis, with both methods, especially that of Meinicke, gave disappointing results. Occasionally a nonspecific reaction is obtained with the Sachs-Georgi technic; but not in any special pathologic conditions, as in the case of the Wassermann reaction, which has been found positive in malaria, scarlatina, and so on. In conclusion, it is stated that the two reactions are valuable only as supplements to the Wassermann reaction. Although easy to perform, the reading is very difficult and requires a trained serologist.

RECURRENT MIGRATING LYMPHANGITIS. O. MICHAELIS, Acta dermat.-ven. **2**:440 (April) 1922.

Two rather ill-nourished women presented this affection, the symptoms consisting in the appearance, for a few days at a time, of one or two nodules, in various locations about the thighs. These nodules were not sharply circumscribed, were not especially sensitive, and were sometimes erythematous. In both cases, they had first appeared after an attack of epidemic influenza, during which the patient had received injections of camphorated oil in the thighs. In the absence of a biopsy examination, the author rules out erythema induratum and ordinary foreign body tumors, concluding that the symptoms are a result of the oil injections in a soil of latent tuberculosis.

COMPARATIVE STUDIES OF TWO DIFFERENT EXTRACTS IN THE WASSERMANN REACTION. K. HEDEN, Acta dermat.-ven. **2**:451 (April) 1922.

The author describes in detail his method of preparing an ethereal extract of human heart muscle for use as antigen in the Wassermann reaction, his purpose having been to obtain a sharper reaction by having the colloid in a state of very fine dispersion. Lesser's technic for the preparation of ethereal heart extract is also given, and the results of Wassermann tests made during a period of six years, in 23,891 cases, both Lesser's and the author's antigen having been used in each case. All stages and conditions of syphilis, congenital and acquired, were included in the series, as well as cases for diagnosis, and the author's extract seemed to give distinctly better results throughout.

A CASE OF LEUKODERMA FOLLOWING PARAPSORIASIS. J. ALMKVIST. Acta dermat.-ven. **2**:468 (April) 1922.

A man, aged 26, presented an eruption of lichenoid parapsoriasis of three months' duration when first seen by the author in April, 1920. After fruitless treatment, he disappeared. Later he returned, and it was then found that the old lesions had disappeared after repeated exposure to the sun at an island resort. In their place were leukodermic spots, set in a deeply tanned background, and there was a sparse scattering of new papules.

A SECONDARY ERUPTION RECURRING IN SYPHILIS FOURTEEN YEARS AFTER INFECTION. N. RHODIN, Acta dermat.-ven. **2**:521 (April) 1922.

In 1908 and 1909, the patient had had a macular and later a papular eruption, with a Wassermann reaction which was positive, and became negative under mercurial treatment. In January, 1922, he returned with eroded papules in his mouth. *Spirochaeta pallida* was found in smears from the lesions, and the Wassermann reaction was strongly positive.

THE TREATMENT OF PSORIASIS BY NONSPECIFIC SEROTHERAPY. B. CEDERQUIST, Acta dermat.-ven. **2**:522 (April) 1922.

In nine cases, the author has lately injected an immunizing vaccine prepared from gonococci cultures at three-day intervals, in doses from 25,000,000 to 2,000,000,000, each injection, barring severe reactions, consisting of twice the previous amount. Those who showed no general reaction to the injection

did not yield to the treatment; but, in those who reacted more or less violently, the psoriatic lesions often disappeared quickly. In three of the latter, new psoriatic lesions appeared.

SUBCUTANEOUS INJECTIONS OF NEO-ARSPHENAMIN IN THE INTERSTITIAL KERATITIS OF CONGENITAL SYPHILIS. C. CABANNES and J. CHAVANNAZ, J. de méd. de Bordeaux **94**:10 (Jan. 10) 1922.

These injections were given three times a week in the gluteal region, in such a way that the same spot was not injected more often than once a month. A 1 per cent. solution of procain was also employed. There were no untoward results and no discomfort was felt. In the four cases reported, twenty injections seemed to bring about a great improvement.

BIOLOGIC RESEARCHES ON THE FLOCCULATION REACTION OF THE SACHS-GEORGI TEST IN SYPHILIS. S. NICOLAU and A. BANCIU, Ann. de dermat. et syph. **6**:97 (March) 1922.

The authors have separated the end-substance into its several parts and have found that the patient's serum used in the reaction retains its power of flocculation, as demonstrated by placing it in contact with more of the antigen. This property is destroyed by heat. It is thought to be due to the presence of a catalytic agent of the nature of a diastase. The addition of complement to the serum-antigen mixture temporarily inhibits the flocculation; this protective combination is not stable, however, being destroyed by heat or by the lapse of time.

THE INFLUENCE OF TYPHOID INFECTIONS ON THE BORDET-WASSERMANN REACTION. MESTCHERSKY, Ann. de dermat. et syph. **6**:116 (March) 1922.

The author cites two cases of typhus and one of typhoid, recently seen by him, in which persistently positive Wassermann reactions became persistently negative after the febrile infection. The hyperpyrexia is considerd to be the probable cause of this apparently favorable action.

MACROGLOSSIA WITH LESIONS OF THE CHEEKS AND BUCCAL MUCOSA. L. CHATELLIER, Ann. de dermat. et syph. **6**:121 (March) 1922.

A firm, nodular thickening, furrowed in places and covered by a pale, apparently scarred mucosa, had lead several times to an erroneous diagnosis of syphilis, with futile antisyphilitic treatment. The condition had probably always been present, and the author classifies it as a nevus (not hemangioma or lymphangioma).

CARDIAC SYPHILIS FORTY-FOUR YEARS AFTER THE CHANCRE. A. NANTA and CADENAT, Ann. de dermat. et syph. **6**:124 (March) 1922.

In a man, aged 74 years, with gummas of the scrotum and a sclerogummatous infiltration of the tongue, there was a partial heart block, illustrated by a polygraphic tracing; all these lesions soon disappeared under antisyphilitic treatment.

SYPHILIS RESISTING ARSENIC AND MERCURY, YIELDING WITH BISMUTH. GUIBERT, Ann. de dermat. et syph. **6**:126 (March) 1922.

A penile chancre in which the spirochetes were found grew larger under treatment with a fair amount of mercury and neo-arsphenamin. This therapy was then discontinued and the intravenous injection of bismuth salts begun, a local application being used on the lesion; improvement was immediate.

THE TREATMENT OF SYPHILIS WITH ARSPHENAMIN EXCLUSIVELY (TEN YEARS' EXPERIENCE). R. KREFTING, Ann. de dermat. et syph. **6**:193 (May) 1922.

In serologically negative cases with initial lesions, the author considers five injections usually sufficient, one given every fifteen days, the average adult male receiving from 0.5 to 0.6 gm. at a dose, the adult female from 0.3 to 0.4 gm. In cases of primary syphilis, with a positive Wassermann reaction, he recommends continued treatment, an interval of three or four weeks elapsing after the first course of five injections. In the secondary and later stages, he has had good results. He considers reinfection a not infrequent occurrence. Spinal puncture for diagnostic and therapeutic purposes is decried, and also the idea of the so-called "provocative Wassermann."

CANCER OF THE NECK OF THE UTERUS AND SYPHILIS. C AUDRY and P. SUQUET, Ann. de dermat. et syph. **6**:206 (May) 1922.

Just as syphilis is considered to be the most frequent underlying cause of carcinoma of the tongue, the authors agree with Bertrand (*Bruxelles medical*, Jan. 15, 1922, p. 144), whose statistics showed it to be present in an overwhelming majority of cases of uterine cancer. Their own series of ninety-one cases shows a positive Wassermann reaction in 66 per cent., which is surely far above the normal.

ETIOLOGIC AND HISTOLOGIC CONSIDERATIONS APROPOS OF AN EPIDEMIC OF FOLLICULAR KERATOSIS. ROCAMORA, Ann. de dermat. et syph. **6**:209 (May) 1922.

Fourteen cases appeared simultaneously in an institution, the ages of the patients ranging between 7 and 13 years. All had been previously healthy, and there was no sign of tuberculosis or tinea. The lesions were grouped in some cases on the extensor surfaces, in others on the flexor, and there was also a sparsely scattered eruption elsewhere; the hands and feet were free. The element was a pinpoint follicular protrusion with an adherent horny plug, there being scarcely any sign of acute inflammation. Microscopic study verified this. A small coccus was found, not unlike that which Sabouraud has described.

These cases are classified separately under the heading of "follicular keratoses."

A CONTRIBUTION TO THE STUDY OF LUPUS PERNIO. R. RABUT, Ann. de dermat. et syph. **6**:227 (May) 1922.

The literature is reviewed, with special emphasis on the work of Schaumann (*Annales*, 1917, p. 537, and 1919, p. 385), who considers lupus pernio a part of the syndrome of benign lymphogranulomatosis, associated with sarcoid. The author describes a case of his own, showing Boeck's sarcoid and lupus pernio,

with possible gradations between the two, partially demonstrated histologically. In concluding, he takes a middle course and subdivides the many cases which are given this diagnosis, classifying some as chilblains, some as lupus erythematosus, others as lupus vulgaris and perhaps the remainder in Schaumann's group, possibly including the sarcoids, the angiokeratoma of Mibelli, granuloma annulare and the angiodermites, which Gougerot calls "lupus pernio en plaques."

PARKHURST, Toledo, Ohio.

A CASE OF TRICHOPHYTOSIS IN AN ADULT. E. RIVALIER (Milian), Bull. Soc. franç. de dermat. et syph. **29**:128, 1922.

A woman, aged 30, had probably had the infection since childhood. The involvement was extensive, the scalp being its only site; the organisms seemed to be of the microsporon endothrix variety, but they had not yet been identified by cultures.

CONGENITAL KERATOSIS FOLLICULARIS (DARIER'S DISEASE). LOUSTE and BARBIER, Bull. Soc. franç. de dermat. et syph. **29**:130, 1922.

The patient, a woman, aged 36, was underdeveloped both physically and mentally. Some of the lesions were said to have been present since birth, and the final involvement was general, with certain sites of predilection. The lesions were of all possible types, according to their age and location. The oral mucosa was free. A biopsy examination confirmed the diagnosis. In addition, scabies was present, and also a vesiculopustular eruption, which was said to appear for a few days at each menstrual period.

A CASE OF PARTIAL SCLERODERMA. M. HUGEL, Bull. Soc. franç de dermat. et syph. **2**:15, 1922.

The patient spent four years in the war, during which time he suffered severe trauma to his leg on several occasions. Following this, his leg became swollen and movement of the joints was restricted. Soon after this subsided the skin of the leg became hard and sclerodermic.

The author used thiosinamin and sodium salicylate with good results. He believes the condition might have been due to trauma.

VERRUCOUS ERYTHRO-KERATODERMA EN NAPPES, SYMMETRICAL, PROGRESSIVE AND CONGENITAL. HUDELO et al., Bull. Soc. franç. de dermat. et syph. **2**:45, 1922.

The author presented a boy, aged 16 years, with circumscribed areas of keratoderma, on an erythematous base. The parts affected were the scalp, face, ears, neck, arms, forearms and hands. The eruption, which began at the age of 4 years, was symmetrical and congenital except on the scalp. There was no familial history, no history of syphilis, and the Wassermann reaction was negative.

The histologic section showed marked hyperkeratosis, and atrophic or absent sebaceous glands.

ATYPICAL PRECOCIOUS MALIGNANT SYPHILIS CURED BY BISMUTH. LINGUAL LESION OF UNDETERMINABLE NATURE. LERI, TZANCK and WEISMANN-NETTER, Bull. Soc. franç. de dermat. et syph. **29**:56, 1922.

This was a case of pustular, crusted and deeply ulcerated generalized lesions which appeared fifteen days after the chancre. The patient had no lesions of

the mucous membrane nor any general adenopathy. The Wassermann reaction was strongly positive.

The patient received six injections biweekly of 0.2 gm. of a bismuth preparation. The fever disappeared, and the lesions cleared quickly. On the posterior third of the tongue appeared a cream colored lesion which was painless, noninfiltrated and persistent. The question arose whether this lesion was due to bismuth or syphilis or whether it was independent of both.

McCafferty, New York.

GENERALIZED EPIDERMOMYCOSIS. Louste and M. Laurent, Bull. Soc. franç. de dermat. et syph. **29**:134, 1922.

In a young man, aged 17, an erythematosquamous plaque appeared at one corner of the mouth, with tiny vesicles about its periphery. Within fifteen days, the trunk, arms and thighs were also involved, the patches being numerous and resembling those of pityriasis rosea. The microscopic examination of the scales showed the presence of segmented mycelia, but the organism had not yet been identified.

PITYRIASIS RUBRA PILARIS AND PSORIASIS ASSOCIATED. Hudelo, Boulanger-Pilet and Cailliau, Bull. Soc. franç. de dermat. et syph. **29**: 136, 1922.

In a boy of 10 years, an attack of measles was followed by a generalized eruption with the clinical and histologic characteristics of pityriasis rubra pilaris. There being signs of endocrine disturbance, thyroid extract was prescribed. One month later, among the lesions of pityriasis rubra pilaris typical psoriatic patches appeared. Their nature was shown histologically.

ERYTHROPLASIFORM DYSKERATOSIS OF THE VULVAR MUCOSA. Hudelo, Oury and Cailliau, Bull. Soc. franç. de dermat. et syph. **29**:139, 1922.

The lesions, in a woman, aged 55, had first been noticed in 1907, and in 1916 were removed by the curet, only to recur two years later. As the name tells us, they were smooth red plaques, histologically the site of dyskeratosis. The authors are struck by their resemblance to the lesions of Bowen's precancerous dermatosis, with which they may be identical.

A PEMPHIGOID ERUPTION OCCURRING IN THE COURSE OF A SPASMODIC SYRINGOMYELIA. G. Milian and Lelong, Bull. Soc. franç. de dermat. et syph. **29**:142, 1922.

The eruption was of twenty-eight days' duration in a patient of 66 years, being especially located on the forearms, which were the chief sites of the syringomyelic involvement. There was a 16 per cent. eosinophilia.

A NOTE REGARDING THE ETIOLOGY OF RECURRENT HERPES. Milian and Perin, Bull. Soc. franç. de dermat. et syph. **29**:147, 1922.

The vesicular contents in two cases of recurrent herpes facialis produced a nonphlyctenular keratitis in rabbits, and a similar result was obtained after inoculation from an apparently sterile and negative culture which had been made from the original lesions.

A CASE OF ERYTHROKERATODERMA EXTENDING IN GEOGRAPHIC PLAQUES. E. Jeanselme, P. Chevallier, Burnier and Perin, Bull. Soc. franç. de dermat. et syph. **29**:150, 1922.

In an otherwise apparently healthy girl, aged 18 years, erythematous plaques had begun to appear ten years previously, and the eruption had gradually spread, involving the upper and lower extremities, especially on their extensor aspect, the face and neck, and the trunk, slightly. The palms and soles were affected. The lesions answered the description, clinically and histologically, of congenital ichthyosiform erythroderma. A sister, aged 16 years, had been similarly afflicted since the age of 8. The flexures were remarkably free from the eruption.

A LINEAR NEVUS CORRESPONDING TO DISTRIBUTION OF EIGHTH CERVICAL AND FIRST DORSAL NERVES WITH CERVICAL RIB. A. Leri and A. Tzanck, Bull. Soc. franç. de dermat. et syph. **29**:156, 1922.

A pigmented verrucous unilateral linear nevus was associated with cervical rib on the same side, suggesting that the two may have arisen from the same structural defect.

A DIRECT-LOADING FREEZING CAUTERY. Lortat-Jacob, Bull. Soc. franç. de dermat. et syph. **29**:158, 1922.

An apparatus is described which was designed to supplant the carbon dioxid snow pencil. It has given better results than the older method in the clinic. A cylindrical container is filled with the desired amount of solid carbon dioxid and acetone is added. To one end of the small cylinder, copper applicators of various sizes may be attached, and at the other end is a gauge similar in appearance to the sliding tire-air-pressure gauge, by which the pressure of application is measured.

THE SYMPATHETIC SYSTEM AND THE ENDOCRINE GLANDS IN LINGUA GEOGRAPHICA. A Levy-Franckel and E. Juster, Bull. Soc. franç. de dermat. et syph. **29**:163, 1922.

Four cases are cited to show a possible relationship between disturbances in the thymus, thyroid and gonads and the occurrence of the lingual eruption. In two, the administration of a thyroid compound was followed by fading of the lesions.

THE SYMPATHETIC FACTOR IN THE NITRITOID CRISIS OR VAGOTONIC CRISIS. E. Juster, Bull. Soc. franç. de dermat. et syph. **29**:168, 1922.

In twelve patients, including nine females, the author found an oculocardiac reflex which indicated the presence of a vagotonic state; all of these had been subject to nitritoid crises. The phenomena of this crisis are said to result from a simultaneous parasympathetic stimulation and sympathetic paralysis. Therefore, it seems that vagotonic persons would be more susceptible. Acidity of the arsenical drug, or a lowered alkaline reserve in the blood, serve to precipitate the crisis; therefore, great care must be used in the preparation of the solution. Furthermore, vagotonic patients should receive a preceding prophylactic injection of epinephrin. The administration of belladonna, three times a day, is also advised, with a view toward combating the vagotonic state.

PRESENTATION OF A SEROLOGIC SCALE. LACAPERE and GERBAY, Bull. Soc. franç. de dermat. et syph. **29**:175, 1922.

By accurate quantitative measurement, employing decreasing amounts of the patient's serum for the Wassermann and Hecht reactions, the authors have found what they consider to be a useful gage to follow in treatment. With a fixed "positive" standard, the reaction may be hyperpositive or hypopositive, the symbols Ho(x3), Ho(x5), Ho(x30), etc., representing degrees of hyperpositivity, while Ho represents the normal positive and H2, H4, H6, etc., indicate the degree of hypopositivity. A curve may be plotted in each case as treatment is checked up.

In the authors' opinion, many cases in which the Wassermann reaction seems irreducible have really been strongly hyperpositive and are becoming less and less so under treatment.

GENERAL THERAPEUTIC RESULTS OBTAINED BY THE USE OF AMINO-ARSENOPHENOL (132) INTRAMUSCULARLY IN THE TREATMENT OF SYPHILIS. E. JEANSELME, POMARET and M. BLOCH, Bull. Soc. franç. de dermat. et syph. **29**:182, 1922.

This product contains 40 per cent. of arsenic, and is said to be much more stable than neo-arsphenamin. Its injection intramuscularly is said to be less painful than that of the soluble salts of mercury. The authors usually inject 0.12 gm. every other day, 0.24 gm. every fourth day, or 0.36 gm. every seven days, giving a minimum total dose of 2.36 gm. within forty-one days in primary syphilis and 2.80 gm. within fifty-three days in the secondary stage. The clinical and serologic results are similar to those obtained by the arsphenamins, and the authors have found that it can usually be given safely to patients who do not tolerate the intravenous medication.

A CASE OF CANINE ITCH IN MAN. W. DUBREUILH, Bull. Soc. franç. de dermat. et syph. **29**:185, 1922.

The owner of a dog suffering from itch had contracted the affliction from his pet. The sites usually involved in scabies were unaffected. By careful search, the canine itch mite, an organism slightly longer than *Acarus scabei*, was found in a miliary vesicle on the man's arm. No itch mites could be recovered from the dog, which had been treated by a veterinary.

LICHEN PLANUS SUPERVENING IN THE COURSE OF NEO-ARSPHENAMIN TREATMENT. J. MONTPELLIER, A. LACROIX and P. BOUTIN, Bull. Soc. franç. de dermat. et syph. **29**:186, 1922.

Briefly alluding to cases reported by others in 1921, the authors describe one in which a typical eruption of lichen planus appeared after the second injection of neo-arsphenamin, in a man, aged 36. Continued administration of the drug was followed only by extension of the eruption. However, after a rest of two and a half months, the patient returned; and the lesions disappeared after the fourth injection of a new series of neo-arsphenamin.

SCLERODERMA IN PLAQUES AND BANDS. VEDEI, G. GIRAUD and P. BOULET, Bull. Soc. franç. de dermat. et syph. **29**:188, 1922.

The lesions, in a woman, aged 22, had first appeared in her sixteenth year, two years after puberty. Plaques occupied the right breast and left shoulder,

while bands traversed the length of the left upper extremity, including the thumb and forefinger, and also the right leg and foot. There was diffuse infiltration of both thighs.

There was nothing to support theories of nervous or infectious etiology, and there seemed to be no endocrinopathy.

A PRELIMINARY NOTE ON THE USE OF TARTROBISMUTHATE IN THE TREATMENT OF SYPHILIS. J. Nicolas, G. Massia and J. Gate, Bull. Soc. franç. de dermat. et syph. **29**: R. S. 29, 1922.

For several months, the authors have been using this medication. They consider it superior to mercury and only slightly inferior to the arsphenamins, so far as its immediate clinical effect is concerned. It has rather serious inconveniences: the injections are painful, stomatitis is frequent and albuminuria often occurs. Therefore, the drug is to be used cautiously, the oily suspension seeming preferable, in doses of 0.2 gm. every six or seven days for five, six or seven injections. The intramuscular route is always employed.

A CASE OF TERTIARY CONGENITAL SYPHILIS OF THE MEDIAL PREMAXILLA. J. Nicolas, J. Gate and D. Dupasquier, Bull. Soc. franç. de dermat. et syph. **29**: R. S. 34, 1922.

In a boy, aged 13 years, with the stigmas of congenital syphilis, there was a loosening of the upper medial incisors of several weeks' duration; and examination of the palate revealed ulceration and a fistula, the medial premaxilla being involved. Under treatment with neo-arsphenamin, the lesions healed, after sequestrums had been removed; the two teeth remained loose. The authors are about to publish an article dealing with the manifestations of syphilis in the medial premaxilla.

PEMPHIGUS FOLIACEUS. Pautrier and J. Roederer, Bull. Soc. franç. de dermat. et syph. **29**: R. S. 37, 1922.

In a man, aged 44 years, otherwise in fairly good health, there was a generalized eruption of pemphigus foliaceus of nine years' duration, only the palms and soles being spared. The hair was rather sparse and the nails were slightly involved. The Wassermann reaction had been twice positive, in the absence of any history of syphilis. Various forms of treatment, including mild antisyphilitic therapy, were tried, without result.

PAINFUL DERMATITIS HERPETIFORMIS WITH A MENINGEAL REACTION. Pautrier, Bull. Soc. franç. de dermat. et syph. **29**: R. S. 41, 1922.

In August, 1921, a man, aged 74, first noticed extremely pruritic erythematous patches on the scrotum, which soon spread and were set with vesicles. The usual sites of predilection were soon involved, and there was an eosinophilia of 19 per cent. in the circulating blood, and of 45 per cent. in the contents of the vesicles. Painful sensations accompanied the usual pruritus. The spinal fluid contained six lymphocytes per cubic millimeter and an increased amount of albumin, which may have had something to do with the sensory disturbances.

A CASE OF PITYRIASIS RUBRA PILARIS. O. ELIASCHEFF and ZIMMERLIN, Bull. Soc. franç. de dermat. et syph. **29**: R. S. 43, 1922.

A typical eruption of general distribution is described in a boy, aged 16 years; it had started on the palms and soles in May, 1920. The patient was underdeveloped, and there may have been an endocrine factor.

A CASE OF ELEPHANTIASIS NOSTRAS. HUGEL, Bull. Soc. franç. de dermat. et syph. **29**: R. S. 46, 1922.

In a man, aged 38, there had been a swelling of the right lower extremity for twelve years, constantly increasing. About the ankle, the skin was folded and hyperkeratotic. The patient had always lived in one locality.

The histologic features were: hyperplasia of all the elements excepting the elastic tissue, thick-walled vessels surrounded by an infiltration including plasma and mast cells, and dilatation of the lymphatic vessels.

A CASE OF ACANTHOSIS NIGRICANS ACCOMPANYING GASTRIC CARCINOMA. PAUTRIER, Bull. Soc. franç. de dermat .et syph. **29**: R. S. 50, 1922.

A man, aged 35, had had abdominal distress for six years. A laparotomy, in August, 1921, revealed the presence of gastric malignancy and a gastro-enterostomy was performed. One month later, following an intense pruritus, the lesions of acanthosis nigricans appeared, located especially in the great flexures.

A NEW MEANS OF LOCAL ANESTHESIA. S. CHAUVET, L'Hopital **10**: 193 (April) 1922.

The "gazotherme," a portable apparatus for anesthetizing prior to dental and minor surgical operations, is said to be efficient and without drawbacks. A stream of oxygen is directed accurately against the part to be anesthetized, its temperature being gradually reduced by means of a controllable cooling coil containing carbon dioxid, until the field has been frozen.

THE PATHOGENESIS AND TREATMENT OF EDEMAS. MAURIAC, J. de méd. de Bordeaux **94**:103 (Feb. 25) 1922.

The theories of causation of the various acute and chronic edemas are reviewed, but especial consideration is given to nephritic edema, which can be removed, the author believes, by the administration of potassium and calcium salts, these ions replacing the undesirable majority of sodium ions.

PARKHURST, Toledo, Ohio.

RECURRING URTICARIAL CRISES DUE TO WOOL. R. DAMADE, J. de méd. de Bordeaux **94**:111 (Feb. 25) 1922.

A woman experienced these attacks every time she slept on a certain wool mattress, but the symptoms were gradually becoming less marked. The wool itself is blamed, rather than agents employed in its bleaching.

FRENCH SOCIETY OF DERMATOLOGY AND SYPHILOGRAPHY. Presse. méd. **30**:228 (March) 1922.

Dermatitis from "Kabyline": Hudelo presented a patient who had a dermatitis of the thorax which began in the axillae as a result of wearing a corsage

containing a ruby red dye of kabyline. The eruption became generalized after using a weak sulphur ointment.

Alopecia Areata, Syndrome of Irritation from the Large Sympathetic Nerve: Lévy-Frankel presented a patient who had a war wound involving the nerves at the elbow. The involvement of these nerves caused atrophy of the scapular muscles, vasomotor and thermic changes, tachycardia with emotivity and finally alopecia areata of the beard and scalp. From this idea and the coexistence of alopecia areata with exophthalmic goiter, zona and scleroderma, the author concludes that irritation of the large sympathetic nerve plays a rôle in the genesis of alopecia areata.

Origin of Dyshidrosis: Sabouraud observed a typical case of dyshidrosis and made cultures. The cultures were sterile. It is his opinion that in true dyshidrosis one never finds fungi. Brocq shared this opinion. Darier has seen some mycelial filaments in certain cases of dyshidrosis. The search is often long and difficult.

Hemodiagnosis of Hereditary Syphilis: Leredde thought hereditary syphilis is unrecognized in 95 per cent. of the cases. He studied the presence of alterations in the blood of presumptive hereditosyphilitic patients. If one used a recognized treatment, namely, arsphenamin, one found quite often an elevation of hemoglobin, more often an increased number of red cells and frequently a diminution of mononuclears.

Syphilitic Reinfection: Lepinay reported a case of reinfection. The first chancre was excised and the patient received a prolonged treatment of arsphenamin and mercury. The second chancre appeared not far from the scar of the first chancre, and contained some spirochetes. The new chancre appeared in due time after suspicious coitus. The partner was examined and mucous patches of the vulva were found.

Apropos of a Case of Reinfection: Lacapere gave the history of a patient who had a chancre on the balanopreputial fold and after three years developed a second chancre on the internal aspect of the prepuce. The Wassermann test was negative the first time and the second time positive, in spite of treatment.

Jeanselme made some reservations here because a search for the spirochete was not made in the first chancre, and the patient did not seem to have been treated in a particularly intense manner.

Researches on Acidosis in the Course of Post-Arsenical Erythroderma: Pomaret and Blamoutier showed in the course of postarsenical erythroderma that the subjects attacked are in a state of acidosis. They found the acidosis coefficient high in both the blood and urine. The authors have not been able to ascertain whether the acidosis precedes or results from the arsenical medication.

Brocq displayed much interest at this statement and thought it quite important in order to determine when to discontinue the administration of arsphenamin in susceptible patients.

THE SYNDROME OF THE CORPORA STRIATUM OF SYPHILITIC ORIGIN IN THE AGED. Lhermitti and Comil, Presse méd. **30**:289 (April) 1922.

The authors believe that the symptoms so frequently associated with paralysis agitans are due to a latent syphilis involving the corpora striatum and the pyramidal system.

They cite two cases in which the clinical picture was that of Parkinson's disease, but which at necropsy revealed lesions characteristic of syphilis. It is their opinion that many of these parkinsonian cases are truly syphilitic in origin, even if the analogy is negative. They strongly advocate antisyphilitic treatment in these cases and assure good results if persisted in.

RADICULAR DISTRIBUTION OF THE NEVUS AND OF VITILIGO. KLIPPEL and MATHIEU—Pierre Weil, Presse méd. **30**:388 (May) 1922.

The authors believe nevus and vitiligo are closely associated in their etiology. Many authors support the nervous theory in nevus, while others favor the vascular theory. In the former theory it may be due to a primitive alteration of the neurax, and occurs late in fetal life; in the latter or vascular theory it is due to an alteration of the vascular walls and occurs early in fetal life. The radicular topography is more frequently observed.

Vitiligo appears in a similar manner and is due to local conditions (trauma, syphilitic scars, etc.), as well as to nervous alterations, which are perhaps the more common. Its symmetrical appearance is clearly radicular and must be associated with nervous alterations. Infectious diseases, such as leprosy, tuberculosis, etc., may also cause vitiligo.

THE ETIOLOGY OF LEISHMANIOSIS. JOYEUX, Presse méd. **30**:643 (April) 1922.

There are two types of leishmaniosis, the visceral and cutaneous. The visceral type is characterized by a splenic hypertrophy associated with fever and subdivides itself into two categories: one type existing in India and called kala-azar, the other observed in the Mediterranean valley and affecting only children.

One also recognized two kinds of cutaneous leishmaniosis. The first, the more serious, invades sometimes the mucous membrane and is seen in Brazil. It is the ulcer of Bauru. The second variety is the Oriental button, boil of Biskra or Aleppo button.

The etiology of the Oriental button has been studied for fifteen years. In 1904, the Sergents of Algeria stated that they believed the phlibotome, which is similar to the mosquito but smaller, transmitted the disease. In 1921, the Algerian authors verified their hypothesis by experimental work. They ground up some *Phlibotomi papatasi* sent from Biskra and used the product for inoculation into the forearm of a person. At the end of three months they obtained a typical Oriental button and in its serum they found some *Leishmaniae*. The authors, however, have not proved how the phlibotome conserves the virus, as the Oriental button exists only during the winter, and at this time the insect or phlibotome is hibernating in the larvae stage.

McCAFFERTY, New York.

THE DEVELOPMENT OF SKIN AND HAIR PIGMENT IN THE HUMAN EMBRYO AND THE CESSATION OF PIGMENT FORMATION IN GRAY HAIR (CAUSE OF CANITIES). BLOCH, Arch. f. Dermat. u. Syph. **135**:77-108, 1921.

While hair pigment is developed in the fifth embryonal month, the skin pigment is postembryonal and probably due to the influence of light. The specific Dopa reaction in the epidermis can be positive before pigment is

traceable. The function of the pigment-forming Dopa oxydasis in the hair matrix cells accounts for the color of normal hair.

A CASE OF ULCERATIVE SKIN DISORDER OF THE ECTHYMA GANGRAENOSUM TYPE (WITH PYOCYANEUS BACILLUS). FREI and WIENER, Arch. f. Dermat. u. Syph. **134**:106-118, 1921.

Pustular and ulcerative infiltrations occurred with peripheral spreading probably due to *Bacilli pyocyaneus*. The effect of a pyocyaneus vaccine which was administered also pointed to this etiology.

THE PARTIAL ANTIGENS ACCORDING TO DEYCKE-MUCH IN TUBERCULOSIS CUTIS. FRIED, Arch. f. Dermat. u. Syph. **136**:386-400, 1921.

Sixty-three patients were treated with "partigenes." This therapy did not prove superior to tuberculin treatment.

THE PIGMENTATION OF THE SKIN OF GRAMPUS GRISEUS CUV. KRUEGER, Arch. f. Dermat. u. Syph. **136**:408-415, 1921.

The belief that all epidermis cells are able to form pigment under the influence of light is incorrect. The author believes that the germ plasm takes part in the pigment formation, as the embryo in utero shows the same differences in the distribution of the chromatophores and the quantity of pigment as the skin in later life.

A CONTRIBUTION TO THE PHOTOMETRY OF THE ULTRAVIOLET LIGHT. PASSOW, Arch. f. Augenheilk. **90**:123-126, 1921.

Time and distance of exposure to quartz light is indicated by the various colors of photometer paper which had been exposed in various sessions. This is used for judging the relative intensity of a quartz lamp.

SPECIFIC INFLAMMATIONS IN ANUS AND RECTUM. GOTTSTEIN, Berl. klin. Wchnschr. **58**:36, 1921.

The author reports the following cases:

(1) Periproctic abscess with gonococci in a virgin; (2) extensive rectal and anal tuberculosis with involvement of skin, and (3) extensive destruction of anus due to lupus.

EXPERIMENTAL PROPHYLAXIS OF SYPHILIS. WORMS, Berl. klin. Wchnschr. **58**:39, 1921.

Prophylactics should be applied after coitus and not before coitus.

BROMODERMA TUBEROSUM. HOFFMANN, Berl. klin. Wchnschr. **58**:51, 1921.

The administration of 400 gm. of potassium bromid caused the development of pain size, partly eroded papillomatous proliferations on the legs of a boy of 11 years. The urine test was bromid positive.

METHOD FOR PREPARING SOLUTIONS AT ANY TIME. SAGI, Berl. klin. Wchnschr. **58**:52, 1921.

The substance in question, e. g., neo-arsphenamin, is placed in a special ampule, and covered with a layer of sterile paraffin (for thermolabile substances use paraffin whose melting point is from 28 to 32 C.). The solvent is then poured on this layer and the ampule sealed. When the solution is required for use the ampule is placed in warm water. The paraffin then melts and sinks to the other end.

ROENTGEN RAY IN TREATMENT OF CARCINOMA. FRAENKEL, Berl. klin. Wchnschr. **58**:298, 1922.

The author says that treatment of carcinoma depends, chiefly, on the condition of the collagenous tissue, as the latter, in his opinion, is connected with the endocrine system, and is influenced by the thymus and thyroid glands. The aim of irradiation treatment should be to stimulate the function of the collagenous tissue in the sense of nonspecific stimulation treatment. The direct irradiation of a carcinoma cell is, therefore, probably a wrong idea in carcinoma therapy.

CONTRIBUTION TO THE KNOWLEDGE OF THE LEPTOTHRIX ANGINA. FUERBRINGER, Berl. klin. Wchnschr. **58**:437, 1921.

This is the report of a case in which the leptothrix buccalis was cultivated from the inner surface of the tonsils. Therapeutically, gargles with menthol are advised.

TREATMENT OF ERYSIPELAS WITH TINCTURE OF IODIN. LÄMMERHIRT, Berl. klin. Wchnschr. **58**:1389, 1921.

A strip, two fingers broad, of tincture of iodin is painted on and along the edge of the lesion. A second strip should be painted on the healthy surrounding tissue within 3 c.c. from the lesion.

SUGILLATIONS IN TABES. PINEAS, Berl. klin. Wchnschr. **58**:1530, 1921.

This is a report of three cases of tabes with the rare symptom of circumscribed subcutaneous hemorrhages, which developed spontaneously, chiefly on the lower limbs. All of these patients suffered from syphilitic heart and circulatory disturbances.

ARSPHENAMIN ERUPTIONS. KUSNITZKY and LANGNER, Berl. klin. Wchnschr. **58**:1534, 1921.

The authors advise three exposures, under 0.5 mm. of aluminum, to the roentgen ray. This relieves itching and stimulates cornification.

THE LIPOLYTIC CAPACITY OF THE WHITE BLOOD CORPUSCLES. NEES, Biochem Ztschr. **124**:156-164, 1921.

Not only lymphocytes but also leukocytes have a lipolytic effect and cannot be distinguished in this respect. For tracing the lipolytic ferments both in the lymphocytes and leukocytes a soil is used containing three parts of hogs' lard, one part of wax and methyl red.

AHLSWEDE, Hamburg, Germany.

INVESTIGATION OF THE PATHOGENESIS OF IODID AND BROMID ACNE. H. HAXTHAUSEN, Dermat. Ztschr. **35**:54 (Nov. 1921.

It seems possible that the action of iodid and bromid on the diffusion of different substances causing inflammation plays a part in the production of iodid and bromid acne. The altered luetin reaction after iodid is quoted as one basis of this, in addition to some bacterial experiments. It is impossible to determine whether such an action of the iodids and bromids is either the proper or only explanation for the eruption. It would seem also that the iodid and bromid were themselves not directly responsible; but it was the action of these salts on substances called forth by them from the body which resulted in changes leading to the eruption. No solution to the problem is offered.

NEURODERMATITIS AND CARCINOMA OF THE CLITORIS IN A YOUNG GIRL. H. MILLER, Dermat. Ztschr. **35**:70, 1921.

A unique history is presented of a girl, 24 years of age, who had been under observation by dermatologists for some years, and who had been presented before dermatologic societies at one time or another, so that the sequence of events could be vouched for. She presented a neurodermatitis of the genital region, and then successively, papillomas and carcinomatous degenerations. According to Fohr, there were twelve carcinomas of the clitoris among twenty-two reported carcinomas of the genital region in young women.

DARIER'S DISEASE, WITH REPORT OF A CASE. H. LIPPERT, Dermat. Ztschr. **35**:76, 1921.

A characteristic case of Darier's disease in a man of 35 years is described. The author's conclusions are: Darier's disease is a congenital disease, which is also hereditary, and as a rule it manifests itself about puberty. The cause is related to an unknown disturbance of the internal secretory mechanism of the body, and may be related to the cause of tumors, especially to the group of malignant epithelial tumors. Organotherapy has been reported as giving favorable results, but in no case has cure resulted. The reason is that Darier's disease is primarily a germplasm disturbance. Organotherapy therefore is only symptomatic therapeutics. Of all other methods of treatment, the roentgen ray in repeated doses is the best for cosmetic and certain results. The bibliography includes articles as recent as 1920.

ACTIVATION OF PROTOPLASM AND OSMOTHERAPY, WITH ESPECIAL REFERENCE TO INTRAVENOUS GRAPE SUGAR INJECTIONS. W. SCHOLTZ, Dermat. Ztschr. **35**:127, 1921.

Egg white, terpentine, milk fats, sulphur, hypertonic and hypotonic solutions of salt and sugar have been used in this type of treatment. The diseased or altered cell is more deeply influenced by these substances than the healthy cell. Little is known definitely concerning the mechanism of the action of this form of treatment. Among the diseases of the skin treated with injections of grape sugar intravenously, exudative eruptions were quickly and favorably influenced. Several patients with grave cases of pemphigus were treated, and the large bullae disappeared after only a few injections. Dry eczemas and psoriasis were treated; likewise bacterial affections. The spirochetes of syphilis diminished in active syphilis. Injections of grape sugar are recommended for severe exanthems following arsphenamin and mercury.

SO-CALLED "FIXED" AND ORDINARY URTICARIAL RECURRENT EXANTHEMS FOLLOWING ARSPHENAMIN AND MERCURY. C. GUTMANN, Dermat. Ztschr. **35**:135, 1921.

Three patients are described. The first presented a typical example of the so-called fixed exanthem following administration of neo-arsphenamin; the second presented an acute, urticarial eruption of short duration and symptoms of angioneurotic edema after a single intravenous injection of novasurol; and the third presented a universal urticaria accompanied by high temperature after an injection of neo-arsphenamin and novasurol (in combination in the same syringe) and the same picture recurred after injection of neo-arsphenamin and silver arsphenamin. Singularly, similar eruptions appeared after intraspinal injections of 1.5 or 1.6 mg. of sodium arsphenamin. No essential differences could be detected in these three cases. No other complications were noted in these patients.

GOODMAN, New York.

XANTHOCHROMIA IN THE CEREBROSPINAL FLUID. LESCHKE, Deutsch. med. Wchnschr. **47**:376 (April 7) 1921.

Xanthochromia of the spinal fluid is due to the formation of bilirubin from red blood corpuscles. It is traced with the diazo-reaction. Xanthochromia is frequent in hemorrhagic inflammations and hemorrhages of the central nervous system.

A NOTE ON REVACCINATION. SOBERNHEIM, Deutsch. med. Wchnschr. **47**:672 (June 16) 1921.

Experiments with rabbits concerning vaccine immunity proved that a reactionless revaccination effects a strong antibody formation, and thereby an increased immunization. Whether this also refers to the human body must still be proved.

SYPHILIS OF THE EYE. IGERSHEIMER, Deutsch. med. Wchnschr. **47**:738 (June 30) 1921.

The author found that *Spirochaeta pallida* is nearly always located in that layer of the cornea which borders the eye chamber. He therefore injected arsphenamin into the front eye chamber of rabbits with satisfactory results.

EARLY NEUROSYPHILIS. WEIGELDT, Deutsch. med. Wchnschr. **47**:1018 (Sept. 1) 1921.

Neurorecurrences are explained as previously existing foci, which are provoked by arsphenamin. Prognostically, there does not exist a predisposition in nerve syphilis for metasyphilis. Tabes is considered a genuine late syphilis. Intraspinal medication is not advised, except as an ultima ratio. Arsphenamin therapy cannot prevent late syphilitic involvement of the nervous system.

ROENTGEN-RAY DOSAGE IN RELATION TO ROENTGEN-RAY BURNS. KURTZAHN, Deutsch. med. Wchnschr. **47**:1326 (Nov. 3) 1921.

After inunctions with mercury, the radiosensitiveness of the skin is frequently increased. The author mentions a case of trichinosis in a patient who developed roentgen-ray ulcer (there was no overdosage). He ascribes the ulcer to the increased radiosensitiveness of the skin caused by the trichinosis.

SOFT CHANCRE VACCINES. STÜMPKE, Deutsch. med. Wchnschr. **47**:1331 (Nov. 31) 1921.

This is a short report on active immunization of soft chancre. The difficulties lay in the preparation of suitable cultures of streptobacilli. Ordinary agar was used with the addition of 1, 5 or 10 per cent. human or rabbit blood. Treatment, exclusively with vaccines prepared from these cultures with sodium chlorid solution, plus phenol, distinctly hastened healing of chancrous lesions.

RADIOTHERAPY OF CARCINOMA WITH STIMULATING RAYS. FRAENKEL, Deutsch. med. Wchnschr. **47**:1396 (Nov. 17) 1921.

The author advises small doses which suffice to destroy fully developed carcinoma cells, while incompletely developed carcinoma cells may resist even the most heavy exposures. It is, therefore, not possible to destroy the carcinoma cells. The author advises the stimulation of all endocrine glands. This is more important than to influence the carcinoma directly.

A NEW METHOD OF PREPARING SOILS FOR CULTIVATING BACTERIA. BRUNHÜBRER and GEIGER, Deutsch. med. Wchnschr. **47**:1397 (Nov. 17) 1921.

This is a preliminary report of a new soil prepared from higher fungi for the cultivation of bacteria.

THUMB CARCINOMA IN COBBLERS. STAHR, Deutsch. med. Wchnschr. **47**:1452 (Dec. 11) 1921.

Stahr reports the development of a deep cancroid down to the bone on the thumb of a cobbler's apprentice aged 17. The author holds that repeated pricking and mechanical irritation through handling certain pointed tools accounts for the disorder. The "oat-epithelioma on the tongue of rats which are fed exclusively with oats is probably caused in a similar way. The author compares the cobbler's carcinoma with xeroderma pigmentosum. While in the former the external irritation predominates and the internal disposition plays no rôle, in the latter, the internal disposition alone is the important factor.

NEUTRALIZATION OF REACTIVITY OF SYPHILITIC SERUMS BY FORMALDEHYD. DOLD, Deutsch. med. Wchnschr. **47**:1485, 1921.

The addition of formaldehyd inhibits or neutralizes the precipitation which normally occurs in Dold's turbidity reaction. As formaldehyd has a strong dehydrating effect and thereby impedes swelling processes, it is assumed that swelling or dehydrating processes must have some relation to the precipitations in the Wassermann, Sachs-Georgi, Meinicke and Dold reactions. Formaldehyd should not be used for preserving serums.

THE BIOLOGY OF THE SKIN. GANS, Deutsch. med. Wchnschr. **47**:1495 (Dec. 8) 1921.

Intracutaneous injection of endocrine gland extracts causes reddening and infiltration of the vaccinated skin part in healthy persons. In men, the reaction is weaker but more lasting than in women. In pregnant women the addition of pregnant plasm or pregnant serum considerably increased the reaction.

THE EFFECT OF INTRAVENOUS GRAPE SUGAR INJECTIONS ON THE SKIN. Scholtz and Richter, Deutsch. med. Wchnschr. **47**:1522, 1921.

This method of treatment was particularly effective in eczema, erythemas and pemphigus. Pruritus was also well influenced. In gonorrhea and syphilis local reactions were observed. From 16 to 30 c.c. of a 50 per cent. solution were administered from four to eight times in the course of eight to fourteen days.

INCREASED EFFECT OF ARSPHENAMIN IN COMBINATION WITH GRAPE SUGAR. Steinberg, Deutsch. med. Wchnschr. **47**:1523, 1921.

The author found almost double the therapeutic effect of neo-arsphenamin when combined with grape sugar injections. Experiments were made with 0.2 gm. neo-arsphenamin and 3 c.c. of a 30 per cent. grape sugar solution. This combination also proved more effective than Ringer's mixed injection of 0.2 gm. neo-arsphenamin and 0.015 gm. mercuric chlorid. The spirochete disappeared from lesions in forty-two hours.

ACTIVATION OF ARSPHENAMIN PREPARATIONS BY METALS. Kolle, Deutsch. med. Wchnschr. **48**:17 (Jan. 5) 1922.

Neo-arsphenamin plus silver arsphenamin forms neo-silver arsphenamin, a new compound, the toxicity of which is not increased even after twenty-four hours' exposure to air, nor is this product precipitated by carbon dioxid snow contrary to the silver arsphenamin. Neo-silver arsphenamin combines the therapeutic advantages of silver arsphenamin with the solubility of neo-arsphenamin.

TREATMENT OF BURNS. Tunger, Deutsch. med. Wchnschr. **48**: No. 3, 1922.

The author recommends the following ointment for noninfected wounds caused by burns: beta-naphthol resublimed, 0.25 gm.; eucalyptus oil, 2 gm.; olive oil, 5 gm.; soft paraffin, 25 gm.; hard paraffin, 67.75 gm. This should be warmed and then painted on with a hair brush.

CIRCUMCISION TUBERCULOSIS. Wolff, Deutsch. med. Wchnschr. **48**: No. 3, 1922.

The author reports fifty-eight cases of tuberculosis following ritual circumcision. He prefers irradiation and iodoform-glycerin injections to surgical treatment.

DAMAGE TO THE RETINA BY ULTRAVIOLET LIGHT. Schanz, Deutsch. optische Wchnschr. **7**:438, 1921.

Degeneration of the center of the retina which is generally noticed in advanced life, in all cases years after the exposure, should be avoided by wearing euphos glass spectacles, which weaken the effect of the ultraviolet rays.

INFLAMMATION AND THE NERVOUS SYSTEM. Kauffmann, Klin. Wchnschr. **1**:12 (Jan. 1) 1922.

The author reports the development of a serious dermatitis on the leg, after oral administration in two days of 8 gm. of potassium iodid. Local application to the lesions of a diluted tincture of iodin caused the development of a

vesicular eruption. As the vesicle formation was sharply defined, and strictly limited to the area treated with iodin, a direct peripheral irritation of the vessel system is assumed.

MAMMARY SECRETION AND BREAST CRISES IN TABES. Biberstein, Klin. Wchnschr. **1**:68 (Jan. 8) 1922.

This is the report of the fifth known case of this curious disease. Sudden painful attacks in the breasts are followed by uninterrupted secretion of a fatty sero-sanguineous fluid. In one case there was colostrum, in three others a secretion of pure milk.

PIGMENT GENESIS IN THE EYE AND THE NATURE OF THE PIGMENT GRAIN. Miescher, Klin. Wchnschr. **1**:173, 1922.

This is the report of an examination of the eyes of chickens, rabbits and guinea-pigs with the Dopa reaction. The pigment forming process in the eye is the same as in the skin though a positive Dopa reaction of the pigment of the retina was found only in a certain stage of embryonal life. As to the pigment mother substance, it is not yet proved that this takes its origin from the cell nucleus.

LASTING EFFECT OF SILVER ARSPHENAMIN. Brüning, Med. Klin. **17**:1293 (Oct. 23) 1921.

Several years' experience has proved that ten injections of neo-arsphenamin administered in three weeks cause clinical symptoms to disappear within five months. With silver arsphenamin administered under similar conditions and in the same dosage, the results attained were distinctly better.

WHICH CHEMICAL PROCESSES CAN TURN CALOMEL WHEN ADMINISTERED PER OS INTO A DANGEROUS POISON? Schumacher, Med. Klin. **17**:1485 (Dec. 4) 1921.

Weak sodium chlorid and hydrochloric acid solutions do not, while alkaline carbonate solutions do immediately, turn a large part of the calomel into soluble mercury compounds. This reaction can therefore not take place in the stomach but exclusively in the intestines. Intestinal paresis, ileus and hernia can cause calomel to be turned into a dangerous poison.

VAGOTONIC MANIFESTATIONS OF THE SKIN AN EXPRESSION OF URATIC DIATHESIS. Pulay, Med. Klin. **18**:79 (Jan. 15) 1922.

The author distinguishes five groups of pruritus: (1) as a vagotonic symptom, (2) as an uratic symptom, (3) in diabetes, (4) in hypertonia, (5) in chronic uremia. In all groups, the blood shows an increased percentage of uric acid. Therapeutically, cinchophen combats the cause, and atrophin the vasomotor symptoms.

NEO-SILVER ARSPHENAMIN TREATMENT OF SYPHILIS. Fabry and Wolff, Med. Klin. **18**:106 (Jan. 22) 1922.

This is the report of 100 cases of syphilis in all stages treated with from ten to seventeen injections, averaging from 0.2 to 0.5 gm. of neo-silver ars-

phenamin twice weekly. In a few cases only, edema of the face and eyelids was seen, otherwise there were no disturbances, no fever, headaches, eruptions and no angioneurotic syndrome. In general, authors do not advise its combination with mercury.

EFFECT OF SILVER SALTS ON THE CELL. SCHUMACHER, Med. Klin. **18**:159 (Jan. 29) 1922.

If metal salts are made to act on cell smears or sections, a silver nucleus picture is obtained. Protoplasm absorbs little silver and stains a light brown, while the nucleus takes up more silver and becomes dark brown.

THE ECZEMATOID FORM OF SKIN DIPHTHERIA. BIBERSTEIN, Med. Klin. **18**:168 (Feb. 51) 1922.

The author saw a large number of cases of eczematoid diphtheria in children suffering from so-called "ear eczemas." Laudé has already described this form of skin diphtheria.

EFFECT OF TRYPAFLAVIN (ACRIFLAVINE) IN DISEASES OF THE BUCCAL AND PHARYNGEAL CAVITY, WITH SPECIAL REFERENCE TO THRUSH. MAIER, München. med. Wchnschr. **68**:49, 1921.

Stomatitis and thrush were well influenced with sprays of a 1 per cent. aqueous trypaflavine solution. Rinsing of the mouth with acriflavine solution and dissolving of sugared tabloids containing 0.5 per cent. of acriflavine proved effective.

ARTIFICIAL CULTIVATION OF BACTERIA IN BUCCAL AND PHARYNGEAL CAVITY. REIS, München. med. Wchnschr. **68**:325, 1921.

All attempts to cultivate foreign bacteria in the buccal cavity have hitherto failed. The author put *B. coli* on the tonsils and succeeded in nine cases in proving its presence after fifty-four days. As *B. coli* are strong antagonists of the ordinary buccal flora, and particularly of diphtheria bacilli, it should prove practical to attempt a "displacing-therapy," in the sense that diphtheria bacilli on tonsils are destroyed or pushed aside by *B. coli*, cultures of which should be painted on the tonsils for this purpose.

NEURORELAPSE AFTER COMBINED SERONEGATIVE PRIMARY SYPHILIS. NATHAN, München. med. Wchnschr. **68**:487 (April 22) 1921.

Energetic arsphenamin treatment (3.1 gm. silver arsphenamin and 0.95 gm. mercuric salicylate in a period of two months) of a case of primary syphilis with a negative Wassermann reaction was followed by a serious neurorelapse. During the course of the latter the serum Wassermann reaction was negative while the spinal fluid was positive in all reactions. The author therefore advises that all patients with primary seronegative cases should submit to at least two, possibly three, "courses" of combined arsphenamin and mercury treatment.

GAS POISONING IN THE ROENTGEN-RAY ROOM. LOENNE, München. med. Wchnschr. **68**:1519 (Nov. 25) 1921.

A surplus of ozone, the quantity of which is difficult to determine, is certainly the damaging factor. The author found 0.2 mg. of ozone, some nitrous acid and hydrogen dioxid, in 1 cubic meter of air in a room, after intense use of the roentgen-ray apparatus.

LOCAL REACTIONS OF INTRACUTANEOUS AOLAN INJECTIONS. GAUNÜTZ, München. med. Wchnschr. **68**:1585 (Dec. 9) 1921.

Aolan is a sterile and toxin-free milk albumin solution for nonsyphilitic protein body treatment. In the treatment of gonorrhea the reaction which occurs is not specific but is seen also in patients without gonorrhea.

COMBINATION OF VARIOLOID AND LATENT SYPHILIS. HILLENBERG, München. med. Wchnschr. **68**:1624 (Dec. 16) 1921.

The syphilitic infection was proved by a maculopapular eruption and positive Wassermann test. The varioloid ran its usual course.

MEINICKE'S THIRD MODIFICATION. RUETE, München. med. Wchnschr. **69**:83 (Jan. 29) 1922.

The author found the Wassermann reaction superior to Meinicke's test for examining spinal fluids.

ROENTGEN-RAY TREATMENT OF PERNIO. LENK, München. med. Wchnschr. **69**:87 (Jan. 20) 1922.

The author recommends irradiation in all stages of pernio. The dose should be from one-third to one-half pastille under 0.5 mm. of aluminum and should be repeated in a fortnight if necessary.

INCREASING THE EFFECT OF ARSPHENAMIN ON THE NERVOUS SYSTEM. KALBERLAH, München. med. Wchnschr. **69**:114 (Jan. 27) 1922.

This is the report of experiments with rabbits which were given 0.1 gm. neo-arsphenamin, either alone or in combination with methylene blue or Bismarck brown. The ashes of the brain of the rabbits that were given the combined treatment contained from two to three times the quantity of arsenic. The author then discusses the possibilities of bringing the arsphenamin nearer to the diseased nervous tissue. He calls attention to the experiments of Embden, who showed that activity, also inflammatory processes and fever render the cell membranes more permeable.

A METHOD OF DEMONSTRATING SPIROCHETES IN FROZEN SECTIONS. STEINER, München. med. Wchnschr. **69**:121 (Jan. 27) 1922.

The section is first treated with a 10 per cent. alcoholic solution of mastic, then it is put into a 0.1 per cent. silver nitrate solution at 37 C. for twenty-four hours, then into a milky mastic solution, and finally into a fresh solution of 5 per cent. hydrochinon.

COMPLEMENT PRESERVATION. HAMMERSCHMIDT, München. med. Wchnschr. **69**:121 (Jan. 27) 1922.

The author recommends an addition of 10 per cent. sodium acetate to complement for preserving it.

PATHOGENESIS OF SYPHILIS MALIGNA. UMANSKY, Schweiz. med. Wchnschr. **51**:48, 1921.

The author bases his explanation of the development of syphilis maligna chiefly on the following points: (1) concomitant disorders such as tubercu-

losis, malaria, alcoholism, pregnancy, etc., which encourage this development, also (2) differences in the quantity and quality of the virus, and (3) the lack of inherited resisting power. The general opinion, endorsed chiefly by Hecht, is that the system is in such weakened state that the antibody production practically ceases. The author proposes to replace the name syphilis maligna by "lues allergica."

EXPERIMENTAL TAR CANCER. Bloch and Dreifuss, Schweiz. med. Wchnschr. **51**:1033 (Nov. 10) 1921.

The authors tried to discover which particular substance in crude tar has the special carcinoma provoking capacity. They found a constituent which boils at 300 C., is soluble in benzene, and which, when freed of phenols, bases and the lower carbohydrates, provoked carcinoma in 100 per cent. of the cases (white mice).

THE EFFICIENCY-INCREASING EFFECT OF ROENTGEN RAYS AND THEIR IMPORTANCE FOR A THEORY OF EFFECT OF DRUGS. Cattani, Schweiz. Rundschau f. Med. **21**:44, 1921.

Small doses generally stimulate the growth of plants, bacteria, etc. Stimulation of growth of human hair has not yet been made use of therapeutically. Ray stimulation therapy (small doses) corresponds to protein body treatment. Many therapeutic agents (tuberculin, organotherapeutic preparations, collargol), also apparently specific agents, act as nonspecific protein bodies if injected parenterally (intramuscularly, intravenously). Small doses stimulate the defensive action of the body cells, large doses inhibit. A drug has only a specific effect because it is directed to one special kind of cell. All kinds of stimulation of a cell have the same effect, they only differ in intensity.

FURTHER THERAPEUTIC EXPERIENCES WITH ROENTGEN RAYS. Stark, Strahlentherapie **12**:4, 1921.

The following dosages may interest the dermatologist as they are somewhat unusual and resemble the technic generally applied in gynecology:

1. Eczema: dose, 1 pastille under 0.5 mm. of zinc, or 0.5, 0.66 and 0.8 pastille, or, a few times, 1 pastille under 3 mm. of aluminum. Cure was effected after two exposures.

2. Lupus vulgaris and tuberculosis cutis: dose, 1 pastille under 0.5 mm. of zinc; repeated from three to four times.

3. Carcinoma: dose, 1 pastille under 0.5 mm. of zinc. Seven of ten cases of carcinoma of the face were healed with from one to three exposures.

THE LOOSE FILTER. Hirsch, Strahlentherapie **12**:260, 1921.

Loose's metal salt crystal filter did not differ in effect from a 5 to 6 mm. aluminum filter. The biologic effects also corresponded to those of the aluminum filters.

INVESTIGATIONS OF INDENTITY OF NEO-ARSPHENAMIN OF IMPORTANCE TO THE PRACTITIONER. L. Kolfer and A. Perutz, Wien. klin. Wchnschr. **34**:594, 1921.

The possibility of substitution of false neo-arsphenamin of German origin for the original gives especial importance to the tests detailed. Before opening the ampule, the identifying signature, serial number, packing of the container

and labels should be examined. The color of the salt should be of the characteristic yellow, and the quality of the division should be that of known neo-arsphenamin. The physician requires a simple test to be used with each injection solution prior to use. The test should be one which while not absolute could distinguish most of the known false products. Reduction of silver nitrate solution is a feasible test. This may be made either with the solution by adding a few drops of the neo-arsphenamin solution to a 10 per cent. solution of silver nitrate, or by using a piece of filter paper previously impregnated with silver nitrate solution. If the test is used with the two solutions, a black precipitate is formed. The few drops of neo-arsphenamin dropped upon the filter paper from the syringe will cause a brown discoloration at the borders of the drop which will turn black in a few minutes. Nessler's reagent gives a black precipitate. Millon's reagent gives a dirty brown precipitate. Alcoholic solution of bichlorid gives a light yellow precipitate. There is a canary yellow precipitate formed with tincture of iodin. If Lugol's solution is used, yellow results, which becomes red. Bromin water gives a yellow to reddish brown precipitate. Ferric chlorid gives a violet shade to the solution. This reaction may also be performed with filter paper. There is a pretty reaction with hydrogen peroxid. If one mixes a 10 per cent. neo-arsphenamin solution with a 3 per cent. hydrogen peroxid solution, the neo-arsphenamin is decolorized, and in a few seconds red results. If the hydrogen peroxid is used in stronger solution, the decolorization lasts only part of a second, and the red appears. If one mixes the 3 per cent. hydrogen peroxid with a few drops of neo-arsphenamin a yellow precipitate is formed, which does not dissolve on further addition of neo-arsphenamin solution.

Some of the substitutes for neo-arsphenamin in falsified ampules have been: (1) barium sulphate and lead chromate; (2) silica, ocher, rye flour and lead chromate; (3) barium and calcium sulphate, lead chromate and napthol yellow; and (4) sand, sodium bicarbonate and ocher.

These are sometimes detected by not going into solution, and this would be the first step indicating falsification. Any suspicion of substitution would be absolutely confirmed by chemical analysis. The tests used by the chemists differ of course from those set forth for the physician.

INTRAVENOUS TREATMENT OF OBSTINATE ITCHING DERMATOSES. Strassberg, Wien. klin. Wchnschr. **34**:595, 1921.

Autoserum and grape sugar treatment, after bleeding, was particularly effective. No benefit was derived from physiologic sodium chlorid solution injections.

ACTIVE IMMUNIZATION WITH EXTRACTS OF FETAL SYPHILITIC LIVER. Jacobi, Ztschr. f. d. ges Neurol. u. Psychiat. **73**: No. 4, 1921.

The author prepared extracts from fetal syphilitic liver and applied these for stimulating the defensive action of the body in the sense of a nonspecific protein therapy. Regular injections of the extracts caused a rise in temperature and anaphylactic symptoms, while the therapeutic effect was doubtful. The author believes that his extracts act as nonspecific proteins, and besides, that they effect a certain specific active immunization.

SEBORRHEA FACIEI IN LETHARGIC ENCEPHALITIS. STIEFLER, Ztschr. f. d. ges. Neurol. u. Psychiat. **73**:455, 1921.

In two cases of epidemic lethargic encephalitis which ran a typical course, there was the curious symptom of a swollen, extremely greasy skin of the face. The secretion of grease was so abnormal that a central origin, i. e., functional disturbance, was assumed in the corresponding cerebral center.

GUMMA OF OVARY WITH POSITIVE SPIROCHETE FINDINGS. KUBINYI and JOHAN, Zentralbl. f. Gynäk. **46**: No. 2, 1922.

The right ovary of a woman of 20 was completely destroyed by nodular gummas. The Wassermann reaction was two plus. Levaditi staining revealed *Spirochaeta pallida*. This is the first case reported of a gumma of the ovary with *Spirochaeta pallida* in acquired syphilis.

IMPORTANCE OF DOMESTIC ANIMALS IN THE SPREADING OF TUBERCULOSIS. KEMPNER, Ztschr. f. Tuberkul. **34**:570-574, 1921.

Of nineteen strains of tubercle bacilli in the dog, sixteen were of the typus humanus and three only of the typus bovinus. Of five strains in cats, three were typus humanus. Domestic animals are therefore a permanent source of infection and require attention in this respect.

PRIMARY MELANOSARCOMA OF THE PENIS. PETERS, Ztschr. f. Urol. **16**:1, 1922.

This is the fifth case reported in the literature. Contrary to the others, the tumor in this case developed in advanced life. The development was rapid with ulceration. Metastases caused the death of the patient.

SPONTANEOUS OCCURRENCE IN THE RABBIT OF A SPIROCHETE RESEMBLING THE PARASITE OF SYPHILIS. KLARENBEEK, Zentralbl. f. Bakteriol., Parasit. u. Inf. **87**:203, 1921.

The author could not find either morphologic or tinctorial peculiarities for *Spirochaeta pallida hominis*. He believes the rabbit spirochete is only a variety of *Spirochaeta pallida hominis* and therefore calls it a *"Treponema pallidum varictas cuniculi."* The disorder itself he calls a "spirochetosis" or "lues cuniculi."

AHLSWEDE, Hamburg, Germany.

Society Transactions

CHICAGO DERMATOLOGICAL SOCIETY

Regular Meeting, June 21, 1922

WILLIAM ALLEN PUSEY, M.D., *Presiding*

PARAPSORIASIS GUTTATA. Presented by DR. EISENSTAEDT.

A Russian, aged 28 years, presented a skin disorder which was said to have developed at the age of 19 after the patient had been swimming. He was ill at that time with cough and fever. The lesions began on the flexor surfaces of both arms and gradually spread over the body, except on the face. There had been occasional remissions. His general health was good. He was drafted in 1917 and served overseas. The lesions consisted of an eruption over the trunk and limbs of faintly pink, lenticular spots, slightly infiltrated and covered with dry, adherent scales.

DISCUSSION

DR. PUSEY said that he thought it was always well to show these cases, if for no other reason, in order to get them grouped in the mind. Dr. Pollitzer objected to the term parapsoriasis, but Dr. Pusey thought it was fortunate that a generalization had been made showing the relation of the various types of cases, and the name parapsoriasis had obtained such wide usage to denominate the group that it was a useless effort to try to replace it, even by a more suitable name.

DR. EISENSTAEDT asked Dr. Mitchell whether there was any unanimity of opinion in regard to these cases being grouped as a tuberculid, as Civatte had maintained.

DR. MITCHELL said that he knew nothing about tuberculosis in this connection.

A CASE FOR DIAGNOSIS. Presented by DR. EISENSTAEDT.

A man, aged 30 years, who presented lesions on the left hand, four months previously had noticed a slight redness on the dorsum of the left hand. About one month previously papules appeared around the eye, which discharged a diffuse watery fluid. Lesions later appeared about the back of the neck, and still later on the toes of the left foot. A mucoid substance exuded from lesions on the toe. The lesions had later become verrucous in character. The Wassermann reaction was negative. He was admitted to Cook County Hospital with the examining room diagnosis of infected ringworm. Treatment had consisted of application of Whitfield's ointment.

DISCUSSION

DR. SENEAR thought the lesion about the left eye, if taken alone, would pass as a nodular, serpiginous syphilid. Those on the hand and back of the neck were unquestionably of the same character, but they did not look at all

like the one about the eye. He did not think it was a fungus infection for the lesions were all too deeply infiltrated. There seemed to be no follicular involvement, such as one would expect to give rise to a deep fungus infection. The lesions on the back of the neck seemed to be clearing at the center and if examined closely some nodules could be seen. At the right side of the neck there were some outstanding follicular pustules which looked as if they might be the primary lesions which had ruptured and discharged. He considered the whole picture puzzling, but thought the lesion on the face was morphologically late syphilis.

Dr. Waugh said that if the lesions appeared at the time the patient stated syphilis was the logical diagnosis. At first glance the case suggested lupus, but it was hard to conceive of lupus becoming so extensive in that length of time.

Dr. Stillians said that he thought the diagnosis lay between lupus and blastomycosis.

Dr. Eisenstaedt said that he thought the lesions on the hand suggested either a verrucous tuberculosis or blastomycosis. The later lesions that Dr. Senear had called attention to on the back of the neck he called miliary abscesses. They had searched for blastomycetes but had found none. Dr. Zeisler had seen the patient and diagnosed lupus, and a section examined microscopically showed only distinct giant cells. Dr. Eisenstaedt thought the case could be regarded as lupus. The verrucous character of the lesions on the hand and also on the neck had been changed considerably by the use of Whitfield's ointment. The Wassermann reaction was negative. The sections would be examined more carefully and stained for blastomycetes.

TUBERCULOUS GUMMATOUS LYMPHANGITIS. Presented by Dr. Eisenstaedt.

The patient was a Mexican, aged 21 years. He complained of painless, multiple swellings of the left foot and thigh and of the neck. Those of the foot and thigh had been present for three years and those of the neck for one week.

He had stubbed his toes some weeks before the lesions had appeared. The trauma was followed by diffuse swelling of the middle toe and of the ankle. The toe had subsequently been amputated, and a discharging sinus still was present. Two weeks later swellings appeared in the left groin. Pain was a prominent symptom at first, but the lesions later became painless. The swelling in the neck was painless but was increasing in size, and there was some difficulty in swallowing.

He had taken a considerable amount of medicine during the last year, chiefly iodids. The Wassermann reaction was negative, as was also roentgen-ray examination for osteitis and osteomyelitis. Tubercle bacilli had been found in direct smear from the skin lesions in the groin after puncture.

Dr. Eisenstaedt wished to know whether to classify the case as a tuberculous gummatous lymphangitis, and considered it interesting because at first glance there was a great resemblance to sporotrichosis.

The histopathology revealed a chronic infective granuloma but was not typical for the usual type of tuberculous lesion. Guinea-pig inoculation was positive to the extent that an acid-fast bacillus answering the morphologic and staining requirements of *B. tuberculosis* was regained from the spleen of the guinea-pig.

DISCUSSION

DR. MITCHELL said that he thought the case was interesting. The picture of the foot taken alone looked like a Madura foot, but the lesions in the groin were not hard and showed no resemblance to that.

DR. SENEAR asked whether this case resembled the tuberculous type of sporotrichosis that Dr. Eisenstaedt described, or was it rather a tuberculosis resembling sporotrichosis?

DR. EISENSTAEDT was impressed with the resemblance to sporotrichosis at first glance. The lesions were definitely along the course of the lymphatics. Cultures for blastomycosis were negative. They had found tubercle bacilli, and the smears were examined carefully by Dr. D. J. Davis, who said that the organisms were definitely tubercle bacilli. Their reason for making the stain was that the case might be a nocardiosis, as reported by Dr. Guy. Finding the tubercle bacillus on direct smear in association with osteomyelitis, for which amputation was done, he thought made the diagnosis clear. The involvement of the foot was more extensive than is usual in sporotrichosis, but they had three cases at the Cook County Hospital in all of which there had been amputation of the fingers for lesions of sporotrichosis.

Dr. Eisenstaedt considered the case one of tuberculosis resembling sporotrichosis.

A CASE FOR DIAGNOSIS. Presented by DR. STILLIANS.

A Jewess, aged 45 years, a piano teacher, for two years had had paroxysms of pain in the small of the back, groin and vagina, followed by severe itching in the groins and about the vulva, less severe on the abdomen, the back of the thighs, arms, palms and backs of the hands. The skin lesions had appeared after the attacks of itching had slowly progressed.

At the time of presentation the patient had patches of lichenification on the inner, upper surface of both thighs. The patches were sharply defined, slightly elevated and pinkish. There were similar small patches on the arms, backs of hands, about the knuckles and the bend of the elbows, and on the back of the neck. The palms were hyperkeratotic in patches.

The white blood count was 12,200. Differential count: polymorphonuclears, 65 per cent.; small mononuclears, 28 per cent.; large mononuclears, 5 per cent.; eosinophils, 2 per cent. The blood sugar was 100 mg. to 100 c.c.

DISCUSSION

DR. PARDEE said that he could see no connection between the disorder and the menopause. The pain in the back and the lesions in the groin he thought indicated a parasitic trouble. He did not see the hands, but if there were lesions on them it suggested the analogy of a case he had had a long time ago, which was quite similar and in which no etiologic factor was ever developed; but the woman recovered under treatment with intestinal antiseptics with colonic lavage, which cleared up her long standing toxemia. Whether it was in spite of this treatment or because of it he did not know.

DR. HURLBURT said that he was impressed with the similarity to a surface infection. He did not see any connection between the constitutional symptoms and the cutaneous manifestations.

DR. SENEAR said that he thought it was a fungus infection. The sharp definition of the lesions in the groin and those of the palms if seen alone

would suggest a probable fungus infection, and the same thing was true in the axilla. In spite of the fact that no fungus had been found, he thought this was the diagnosis, and that there was no connection with the constitutional symptoms described.

Dr. Eisenstaedt said that he thought it was a fungus infection.

Dr. Mitchell said that he thought the lichenification might have been induced by a fungus infection which was certainly not active at present. It had probably been started by a fungus, but he did not think any would be found now.

Dr. Stillians said that he was especially interested in the case on account of the beautiful lichenification, and said it was the finest and most artistic marking he had ever seen.

Book Reviews

RADIUM THERAPY. By Frank Edward Simpson, A.B., M.D., Professor of Dermatology, Chicago Policlinic. Cloth. Price, $7. Pp. 391, with 166 illustrations. St. Louis: C. V. Mosby Company, 1922.

In a moderate size volume the author has attempted to cover the entire subject of radium therapy from both theoretical and practical standpoints. The result is a creditable and interesting book. It is the second work on radiotherapy to have recently come from the pen of a dermatologist. While MacKee's book on "X-Ray and Radium in the Treatment of Diseases of the Skin" confines itself to dermatologic therapeutics, the work of Simpson covers in a more cursory way the entire field of radium therapy in medicine. The present book is the work of a man of large experience in general radium therapy and is written in a clear, scholarly and conservative manner.

The book contains 383 pages, fifty-nine of which are devoted to a rather cumbersome general bibliography. The number of the authors referred to in this text is naturally rather small. About half of the book deals with the physics and biologic action of radium and the general principles of dosage and technic, while the remaining half deals with the treatment of individual diseases. Of the six chapters dealing with different branches of medicine, the one on dermatology covers a little more than fifty pages. Barely a dozen pages, however, of this chapter are devoted to text, the remainder being utilized for illustrations.

In the chapter on dermatology the author mentions the following main groups of diseases in which he states that "radium offers a possibility of use:" malignant and benign tumors, chronic infections, inflammatory and granulomatous infiltrations of uncertain nature, hypertrophies, neuroses and disorders of the appendages of the skin. In the treatment of keloid the writer considers radium to be the method of choice. Special attention is paid to the treatment of various types of nevus, including the use of flexible cloth applicators in the treatment of port wine marks. Contrary to the opinion of some other authorities, the writer advocates the use of radium in pigmented nevus, stating, however, that great care should be used in "order not to give excessive doses." In lupus vulgaris he considers radium of only limited use "being distinctly inferior to the Finsen light." Among inflammatory diseases amenable to radium treatment he mentions with special favor psoriasis of the nails and lichen simplex. In lupus erythematosus he considers that radium is "one of our most valuable agents." Warts and papillomas are discussed briefly, and excellent photographs are given showing results of treatment in sycosis. The subject of epithelioma and sarcoma is dealt with at some length in the chapter on general surgery and is illustrated by some rather striking photographs.

The numerous and excellent photographs showing results of treatment form a feature of the book. In addition there are many tables, charts and illustrations of apparatus. Glazed paper has been used throughout the book. Typographical errors are conspicuous by their absence, and the clearness of type and general appearance of the volume reflect credit on the publishers.

SURGICAL AND MECHANICAL TREATMENT OF PERIPHERAL NERVES. By Byron Stookey, A.M., M.D., Assistant Surgeon, New York Neurological Institute. With a Chapter on Nerve Degeneration and Regeneration by G. Carl Huber, M.D., Professor of Anatomy and Director of Anatomical Laboratories, University of Michigan. Cloth. Price, $10 net. Pp. 273, with 225 illustrations. Philadelphia: W. B. Saunders Company, 1922.

The treatment of peripheral nerve injuries has had a varied history, not always happy, and one of the most valuable heritages that has come to us from the great war is the advance that has been made in this field. The abundant material from the war gave opportunity for the testing of different methods in large numbers of cases and for the application of newer theories, up to then experimental, to the human nervous system. The results have been most interesting and valuable, and have proved that the nearer nerve surgery approaches nerve histology the better are the results obtained. To the neurologist, this seems axiomatic, but unfortunately it has not seemed to be so to many surgeons in the past, or they could not have devised joining operations based on tendon surgery without considering nerve fibers as individuals. The modern neurosurgeon is a neurologist, well grounded in the anatomy, histology and physiology of the nervous system. When peripheral nerves are to be treated, the neurosurgeon should be somewhat of an orthopedist as well, for much of the preliminary and after-treatment is orthopedic.

In this book, the author quite satisfies the foregoing requirements. His approach is primarily anatomic and histologic. To a neurologist, the book contains much of interest. Each nerve and plexus is considered first from the point of view of its embryonic development, with many clarifying references to the phylogenetic, and these points are then collected to form the basis for surgical principals. Operations are described in detail, and considerable space is given to the expectation of results. In places, one could wish that the author's material had been larger, but this is in good measure offset by an extended review of the literature and a compilation of the experience of others. The numerous illustrations add a great deal to the book both in enhancing the appearance and in supplementing the text.

The book opens with a chapter on the anatomy of the spinal nerve, in which is reviewed much of the newer work on development. Dr. Huber's chapter on nerve degeneration and regeneration contains a wealth of material in surprisingly compact form. The reviewer does not know where in English one may find a better exposition of the subject, for the knowledge of which we owe so much to Dr. Huber's original work. The following chapters on surgical methods would interest the surgeon more than the neurologist.

Following these chapters, the author considers in detail the various nerves and nerve plexuses in which injury is likely to occur, and methods of their repair. Never does the author wander away from the anatomic and histologic features of his problem, and one is impressed that he approaches his surgery with the histologic eye. His plan of presentation is consistent throughout. A point of interest to neurologists and neuro-anatomists is the description of anomalous nerve distribution and supply as explaining atypical paralyses and failures of operative results. The author describes and pictures in diagram many of these anomalies which have been described by others. The chapter on nerve tumors seems somewhat sketchy. Causalgia and amputation neuromas form the subjects of the last two chapters.

From the point of view of the neurologist, this book contains much that is of interest and of value, which lies in good measure in the author's clear presentation of the anatomy and development of nerves. It should serve as an easy reference book both for the anatomy of peripheral nerves and for the indications in and prognosis for nerve injuries. It is likely that the general surgeon may glean from it more than would the neurosurgeon, and one may feel glad that it will carry to the general surgeon the neurologist's point of view, which considers the peripheral nerve as a histologic structure. The general makeup of the book is pleasing, and the diction is clear and makes for easy reading.

Index to Current Literature

DERMATOLOGY

Acne. Methods of Cultivating and Identifying Bacillus Acne. H. L. Begley, Philippine Islands Med. A. J. **1**:229 (Nov.-Dec.) 1921.

Acrodynia in Infants: Report of Cases. J. Zahorsky, Missouri State M. A. J. **19**:296 (July) 1922.

Actinomycosis. B. Galli-Valerio, Schweizer. med. Wchnschr. **52**:607 (June 15) 1922.

Actinomycosis, Copper Sulphate in. R. von Baracz, Zentralbl. f. Chir. **49**:634 (May 6) 1922.

Actinomycosis, Primary Pulmonary. Deutsch. med. Wchnschr. **48**:801 (June 16) 1922.

Addison's Disease, Subsequent Course of a Case of. L. G. Rowntree, J. A. M. A. **79**:556 (Aug. 12) 1922.

Anthrax Hazard in Pennsylvania Tanneries. H. F. Smyth, Am. J. Hygiene **2**:346 (July) 1922.

Anthrax, Treatment of. T. Biancheri, Policlinico **29**:718 (May 29) 1922.

Anthrax, Treatment of. L. Conti, Policlinico **29**:720 (May 29) 1922.

Arsenical Poisoning, Acute. W. H. Willcox, Brit. M. J. **2**:118 (July 22) 1922.

Blastomycosis, Local: Report of Case. M. Haase, E. R. Hall and C. H. Marshall, J. A. M. A. **79**:820 (Sept. 2) 1922.

Blue Spot, Mongolian, in Bordeaux. Boisserie-Lacroix, J. de méd. de Bordeaux **94**:355 (June 10) 1922.

Burns, Cause of Death from. R. A. Vaccarezza, Rev. asoc. méd. arg. **35**:48 (Jan. to April) 1922.

Burns, Modern Treatment of. A. de Moraes, Brazil-med. **1**:242 (May 13) 1922.

Cancer, Roentgen-Ray Treatment of. E. H. Molesworth, M. J. Australia **2**:1 (July 1) 1922.

Corpus Cavernosum, Plastic Induration of. Montpellier et al., Ann. d. mal. vén. **17**:523 (July) 1922.

Dermatitis, Exfoliative, Following Silver Arsphenamin. Loyd Thompson, J. A. M. A. **79**:628 (Aug. 19) 1922.

Dermatology, Ultraviolet Rays in. D. Carvalho, Brazil-med. **1**:255 (May 20) 1922.

Dermography, White. A. Sézary, Ann. de méd. **11**:403 (May) 1922.

Eczema. H. B. Mills, New York M. J. & Med. Rec. **116**:125 (Aug. 2) 1922.

Eczema, Infantile. H. Spohn, Canad. M. A. J. **12**:461 (July) 1922.

Eczema Parasiticum. J. W. Jones, Georgia M. A. J. **11**:253 (July) 1922.

Epidermophytosis. A. M. Greenwood, Boston M. & S. J. **187**:176 (Aug. 3) 1922.

Epithelioma on Hand, Surgical Treatment of. A. Manna, Policlinico **29**:753 (June 5) 1922.

Erysipelas Associated with Streptococcal Septicemia, Two Fatal Cases of. J. H. Pollock, Irish J. M. Sc. **5**:172 (June) 1922.

Erysipelas, Treatment of, by Vaccines. J. R. Russell, Brit. M. J. **2**:15 (July 1) 1922.

Exanthem Subitum. Report of Five Cases. A. Goldbloom, Canad. M. A. J. **12**:467 (July) 1922.

Face and Lips, Fatal Outcome of Certain Cases of Staphylococcus Infections of. W. Martin, Ann. Surg. **76**:13 (July) 1922.

Furuncles of Ear Canal. J. A. Glassburg, New York M. J. & Med. Rec. **116**: 135 (Aug. 2) 1922.

Furunculosis, Iodid of Potassium Ionization in. Lacquerrière, J. de radiol. **6**:284 (June) 1922.
Gangosa in Hainan; Report of Case. N. Bercovitz, China M. J. **36**:203 (May) 1922.
Gangosa. Should Gangosa Be Removed from Nomenclature of Tropical Medicine? W. M. Kerr, Am. J. Trop. M. **2**:353 (July) 1922.
Glanders in Man; Two Cases. Said Djémil, Bull. Soc. méd. d. hôp. de Par. **46**:820 (May 26) 1922.
Granuloma, Telangiectatic Pedunculated. G. Anzilotti, Policlinico **29**:301 (June 15) 1922.
Granuloma, Ulcerating (Granuloma Inguinale). H. Goodman, J. A. M. A. **79**:815 (Sept. 2) 1922.
Herpes Zoster, Bilateral. E. Hillenberg, Klin. Wchnschr. **1**:737 (April 8) 1922.
Leprosy, Bacteriology of; Diphtheroid in Leprosy. E. L. Walker, Am. J. Trop. M. **2**:293 (July) 1922.
Leprosy, Treatment and Prognosis of. P. Harper, Brit. M. J. **2**:39 (July 8) 1922.
Leprosy, Treatment of. Gac. méd. de Caracas **29**:79 (April 15) 1922.
Lips and Face, Fatal Outcome of Certain Cases of Staphylococcus Infections of. W. Martin, Ann. Surg. **76**:13 (July) 1922.
Lip, Precancer Lesion of. G. Anzilotto, Riforma med. **38**:411 (May 1) 1922.
Manson. Patrick Manson as a Dermatologist, Appreciation of. J. M. H. Macleod, J. Trop. M. **25**:163 (June 15) 1922.
Measles, Prophylaxis of. P. Nobécourt and J. Paraf, Presse méd. **30**:497 (June 10) 1922.
Mongolian Blue Spot in Bordeaux. Boisserie-Lacroix, J. de méd. de Bordeaux **94**:355 (June 10) 1922.
Psoriasis, Etiology of. Bettmann, Deutsch. med. Wchnschr. **48**:762 (June 9) 1922.
Psoriasis, Treatment of. L. Hudelo, Paris méd. **12**:525 (June 24) 1922.
Psoriasis, Treatment of, by Manganese. J. Moore, Brit. M. J. **2**:41 (July 8) 1922.
Quartz Light Therapy in Skin Diseases. E. L. Oliver, J. A. M. A. **79**:625 (Aug. 19) 1922.
Recklinghausen's Disease. Mamerto Acuña and F. Bazán, Prensa méd. Argentina **9**:12 (June 10) 1922.
Roentgen Rays. Use of, in Diseases of Skin. G. E. Richards, Canad. M. A. J. **12**:478 (July) 1922.
Roseola, Transient, in Recurrent Fever. Oettinger and Halbreich, München. med. Wchnschr. **69**:778 (May 26) 1922.
Scarlet Fever, Epidemiologic Study of, and Its Control in Army Camps. E. B. Maynard, Mil. Surgeon **51**:25 (July) 1922.
Scarlet Fever, Etiology of. IV. Variation or Types of Alkali-Producing Organism in Scarlet Fever. R. W. Pryer, J. Lab. & Clin. M. **7**:592 (July) 1922.
Scarlet Fever, Some Diagnostic Points in. H. R. Mixsell **116**:159 (Aug. 2) 1922.
Scleroderma. G. A. M. van Balen, Nederlandsch. Tijdschr. v. Geneesk. **1**:1978 (May 20) 1922.
Scleroderma, Treatment of. G. Tognini, Riv. crit. de clin. med. **23**:133 (April 25) 1922.
Skin Diseases, Quartz Light Therapy in. E. L. Oliver, J. A. M. A. **79**:625 (Aug. 19) 1922.
Skin Irritants: External and Internal. C. G. Lane, Boston M. & S. J. **187**: 108 (July 20) 1922.
Skin, Peculiar Discoloration of, Probably Resulting from Mercurial Compounds (Calomel) in Proprietary Face Creams. W. H. Goeckermann, J. A. M. A. **79**:605 (Aug. 19) 1922.

Skin. Suggestions in Treatment of Certain Diseases of Skin. J. M. King, New Orleans M. & S. J. **75**:17 (July) 1922.

Skin, Use of Roentgen Rays in Diseases of. G. E. Richards, Canad. M. A. J. **12**:478 (July) 1922.

Sporotrichosis. F. W. Cregor, J. A. M. A. **79**:812 (Sept. 2) 1922.

Sporotrichosis, Case of Disseminated Gummatous Sporotrichosis, with Lung Metastasis. L. M. Warfield, Am. J. M. Sc. **164**:72 (July) 1922.

Ultraviolet Rays in Dermatology. D. Carvalho, Brazil-med. **1**:255 (May 20) 1922.

Variola in Bagdad. H. C. Sinderson, Edinburgh M. J. **29**:18 (July) 1922.

Variola, Violet Ray in Treatment of. P. Romeo, Boston M. & S. J. **187**:215 (Aug. 10) 1922.

Verrucae Plantares, Extensive Case of. G. P. Lingenfelter, Colorado Med. **19**:147 (July) 1922.

SYPHILOLOGY

Abortions and Syphilis. R. E. Seibels, South Carolina M. A. J. **18**:175 (June) 1922.

Abortion, Stillbirths and Infant Mortality, Syphilis in Relation to. W. G. Cosbie, Am. J. Obst. & Gynec. **4**:40 (July) 1922.

Arsenic, Elimination of, in Urine of Syphilitic Patients After Intravenous Injection of Arsphenamin. C. Weiss and G. W. Raiziss, Arch. Int. Med. **30**:85 (July) 1922.

Arsenicals, Action of, Adaptation of the Organism Thereto and Poisoning Therefrom. K. Ullmann, Wien. klin. Wchnschr. **35**:502 (June 1) 1922.

Arsphenamins and Hemoclastic Crisis. J. Golay and Benveniste, Ann. d. mal. vén. **17**:481 (July) 1922.

Arsphenamin and Mercury Intravenous Injection. H. Boas and B. Pontoppidan, Ugesk. f. Læger **84**:645 (June 8) 1922.

Arsphenamin, Biologic Reactions of. III. Immediate Toxicity as Contrasted with Late Ill Effects, and Rôle of Agglutination in Production of Former. J. Oliver and S. S. Yamada, J. Pharmacol. & Exper. Therap. **19**:393 (July) 1922.

Arsphenamin, Bleeding Time Under. A. Sézary, Bull. et mém. Soc. méd. d. hôp. de Par. **46**:862 (June 2) 1922.

Arsphenamin by Subcutaneous Injection. J. Minet and R. Legrand, Rev. de méd. **39**:230 (April) 1922.

Arsphenamin Dermatitis. W. Heyn, Deutsch. med. Wchnschr. **48**:767 (June 9) 1922.

Arsphenamin, Elimination of Arsenic in Urine of Syphilitic Patients After Intravenous Injections of. C. Weiss and G. W. Raiziss, Arch. Int. Med. **30**:85 (July) 1922.

Arsphenamin, Fatal Cerebral Disturbances from. C. Hart, Med. Klin. **18**:444 (April 2) 1922.

Arsphenamin, Silver, Exfoliative Dermatitis Following. Loyd Thompson, J. A. M. A. **79**:628 (Aug. 19) 1922.

Arsphenamin Treatment of Syphilis, Prophylactic. W. Schänfeld, München. med. Wchnschr. **69**:811 (June 2) 1922.

Backache, Syphilitic. W. Thompson, Am. J. M. Sc. **164**:109 (July) 1922.

Bismuth in Treatment of Neurosyphilis. J. M. Agramunt, Siglo méd. **69**:397 (April 15) 1922.

Bismuth in Treatment of Syphilis A. Machado and A. E. Area Leite, Brazil-med. **1**:195 (April 22) 1922.

Bismuth in Treatment of Syphilis. U. Paranhos, Brazil-med. **1**:311 (June 10) 1922.

Bismuth Treatment of Syphilis, Present Status of. H. Haxthausen, Hospitalstidende **65**:342 (June 10) 1922.

Bismuth, Treatment of Syphilis with. H. Müller, München. med. Wchnschr. **69**:547 (April 14) 1922.

Bleeding Time Under Arsphenamin. A. Sézary, Bull. et mém. Soc. méd. d. hôp. de Par. **46**:862 (June 2) 1922.
Cerebrospinal Fluid and Syphilis. Nonne, Prensa méd. Argentina **9**:33 (June 10) 1922.
Chancre, Syphilitic, in Ear. E. Conde Flores, Gac. méd. de Caracas **29**:11 (Jan. 15) 1922.
Chancres, Syphilitic, Unusual Locations for. Müller, Deutsch. med. Wchnschr. **48**:803 (June 16) 1922.
Chancre, Tuberculous. J. A. Nixon and A. R. Short, Brit. J. Surg. **10**:44 (July) 1922.
Ear, Syphilitic Chancre in. E. Conde Flores, Gac. méd. de Caracas **29**:11 (Jan. 15) 1922.
Epinephrin. By-Effects of Neo-Arsphenamin and How to Prevent Them; with Special Reference to Epinephrin. H. Reinhard-Eichelbaum, Deutsch. med. Wchnschr. **48**:804 (June 16) 1922.
Flumerin—A New Mercurial for Intravenous Treatment of Syphilis: First Report of Chemical, Animal and Clinical Experiments and Results. E. C. White, J. H. Hill, J. E. Moore and H. H. Young, J. A. M. A. **79**:877 (Sept. 9) 1922.
Formalin Test for Syphilis: Some Conditions Controlling Gel Formation. A. G. Holborow, Lancet **2**:274 (Aug. 5) 1922.
Formol-Gel Reaction in Blood Serum of Syphilitics. C. A. Watson, Canad. M. A. J. **12**:469 (July) 1922.
Formol-Gel Test for Syphilis, Value of. S. Ramakrishnan, Indian M. Gaz. **57**:254 (July) 1922.
Gangrene of Fingers Associated with Secondary Syphilitic Lesions. G. Guillain and C. Kudelski, Bull. et mém. Soc. méd. d. hôp. de Par. **46**:917 (June 9) 1922.
Gangrene of Penis, Syphilitic. E. Orphanidès, Ann. d. mal. vén. **17**:516 (July) 1922.
Genital Lesions, A Study of Four Hundred and Eighty-Five Cases with. J. R. Driver, J. A. M. A. **79**:867 (Sept. 9) 1922.
Heart Disease, Syphilitic. S. A. Meza and J. Paulis, Rev. españ. de med. y cirug. **5**:199 (April) 1922.
Hecht's Modification of Wassermann Test. W. Loele, München. med. Wchnschr. **69**:885 (June 16) 1922.
Hemoclastic Crisis and Arsphenamins. J. Golay and Benveniste, Ann. d. mal. vén. **17**:481 (July) 1922.
Infant Mortality, Abortion and Stillbirths, Syphilis in Relation to. W. G. Cosbie, Am. J. Obst. & Gynec. **4**:40 (July) 1922.
Intestine, Small, Acquired Syphilis of. R. Schmidt, Beitr. z. klin. Chir. **126**: 61, 1922
Kahn Precipitation Test in the Diagnosis of Syphilis: A Preliminary Study. H. L. Keim and U. J. Wile, J. A. M. A. **79**:870 (Sept. 9) 1922.
Lung, Syphilis of. J. Lecaplain, Bull. et mém. Soc. méd. d. hôp. de Par. **46**:930 (June 16) 1922.
Mental Disease, Syphilis in. H. Hoven, Arch. méd. belges **75**:393 (May) 1922.
Mercurial Compounds (Calomel) in Proprietary Face Creams, Peculiar Discoloration of Skin Probably Resulting from. W. H. Goeckermann, J. A. M. A. **79**:605 (Aug. 19) 1922.
Mercurosal, Intravenous Injection of, in Treatment of Syphilis. W. T. Williams, Canad. M. A. J. **12**:401 (June) 1922.
Mercury, Anaphylaxis to. Gougerot and Blamoutier, Bull. et mém. Soc. méd. d. hôp. de Par. **46**:868 and 873 (June 2) 1922.
Mercury. Simultaneous Arsphenamin and Mercury Intravenous Injection. H. Boas and B. Pontoppidan, Ugesk. f. Læger **84**:645 (June 8) 1922.
Myopathy with Inherited Syphilis. G. Milian and Lelong, Bull. et mém. Soc. méd. d. hôp. de Par. **46**:893 (June 2) 1922.

Neo-Arsphenamin, By-Effects of, and How to Prevent Them; with Special Reference to Epinephrin. H. Reinhard-Eichelbaum, Deutsch. med. Wchnschr. **48**:804 (June 16) 1922.

Nervous System. Results of Treatment in Syphilis of Nervous System. R. Hearn, Brit. M. J. **2**:37 (July 8) 1922.

Neurosyphilis, Asymptomatic, Studies in. J. E. Moore, Bull. Johns Hopkins Hosp. **33**:231 (July) 1922.

Neurosyphilis, Asymptomatic, Studies in. IV. The Apparent Rôle of Immunity in the Genesis of Neurosyphilis. A. Keidel, J. A. M. A. **79**:874 (Sept. 9) 1922.

Neurosyphilis, Bismuth in Treatment of. J. M. Agramunt, Siglo méd. **69**: 397 (April 15) 1922.

Neurosyphilis, Bismuth in Treatment of. Evrard, Ann. d. mal. vén. **17**:525 (July) 1922.

Neurosyphilis, Classification of: Concerning Therapy. L. H. Cornwall, New York State J. M. **22**:316 (July) 1922.

Neurosyphilis, Early. Nonne, Prensa med. Argentina **9**:68 (June 20) 1922.

Paralysis, Amyotrophic, Early in Tabes. W. Schmitt, Med. Klin. **18**:436 (April 2) 1922.

Penis, Syphilitic Gangrene of. E. Orphanidès, Ann. d. mal. vén. **17**:516 (July) 1922.

Reticular Fibers in Syphilis and Other Cutaneous Diseases, Occurrence and Significance of. E. Zurhelle, Deutsch. med. Wchnschr. **48**:724 (June 2) 1922.

Rheumatism, Deforming Articular, of Syphilitic Origin. H. Dufour and Geismar, Bull. et mém. Soc. méd. d. hôp. de Par. **46**:970 (June 23) 1922.

Serum, Opacity of Mixture of, and Wassermann "Antigen" in Progressively Increasing Concentrations of Sodium Chlorid. J. Holker, J. Path. & Bacteriol. **25**:291 (July) 1922.

Sigma and Wassermann Tests. W. T. Collier, Lancet **2**:274 (Aug. 5) 1922.

Silver Arsphenamin, Exfoliative Dermatitis Following. Loyd Thompson, J. A. M. A. **79**:628 (Aug. 19) 1922.

Spirochaeta Pallida in Sperm. R. Lakaye, Arch. méd. belges **75**:385 (May) 1922.

Stillbirths, Abortion and Infant Mortality, Syphilis in Relation to. W. G. Cosbie, Am. J. Obst. & Gynec. **4**:40 (July) 1922.

Syphilis, Abortive Treatment of. P. Pediconi, Policlinico **29**:937 (July 17) 1922.

Syphilis, Acquired, of the Small Intestine. R. Schmidt, Beitr. z. klin. Chir. **126**:61, 1922.

Syphilis, African, Tabes in Two Europeans from. A. Sézary and J. Alibert, Bull. et mém. Soc. méd. d. hôp. de Par. **46**:816 (May 19) 1922.

Syphilis and Abortions. R. E. Seibels, South Carolina M. A. J. **18**:175 (June) 1922.

Syphilis and the Cerebrospinal Fluid. Nonne, Prensa méd Argentina **9**:33 (June 10) 1922.

Syphilis and Other Cutaneous Diseases, Reticular Fibers in, Occurrence and Significance of. E. Zurhelle, Deutsch. med. Wchnschr. **48**:724 (June 2) 1922.

Syphilis and Yaws, Relation Between, as Observed in American Samoa. J. C. Parham, Am. J. Trop. M. **2**:341 (July) 1922.

Syphilis, Bismuth in Treatment of, II. Parreiras Horta and P. Gans, Brazil-méd. **1**:183 (April 15) 1922.

Syphilis, Bismuth in Treatment of. A. Machado and A. E. Area Leite, Brazil-med. **1**:195 (April 22) 1922.

Syphilis, Bismuth in Treatment of. U. Paranhos, Brazil-med. **1**:311 (June 10) 1922.

Syphilis, Bismuth in Treatment of. H. Grenet et al., Bull. de l'Acad. de méd. **87**:658 (June 13) 1922.

Syphilis, Bismuth Treatment of. P. Wolfer, Schweizer. med. Wchnschr. **52**: 703 (July 13) 1922.
Syphilis, Cerebrospinal, Types of, in China. A. H. Woods, China M. J. **36**: 206 (May) 1922.
Syphilis, Clinical Diagnosis of. H. A. Dixon, Canad. M. A. J. **12**:470 (July) 1922.
Syphilis, Congenital. G. Stümpke, München. med. Wchnschr. **69**:551 (April 14) 1922.
Syphilis, Congenital, and Eruption of First Teeth. E. Moody, Missouri State M. A. J. **19**:295 (July) 1922.
Syphilis, Developments in Diagnosis and Treatment of. L. W. Shaffer, U. S. Naval M. Bull. **16**:1011 (June) 1922.
Syphilis, Diagnosis and Treatment of. G. W. Payne, Kentucky M. J. **20**:393 (June) 1922.
Syphilis, Early Clinical Diagnosis of. H. Colman, Med. Klin. **18**:437 (April 2) 1922.
Syphilis, Expression of Eyes as Sign of. A. Chelmonski, Rev. de méd. **39**: 172 (March) 1922.
Syphilis, Family; Its Relation to Public Health. E. Hess, Penn. M. J. **25**:693 (July) 1922.
Syphilis in Mental Disease. H. Hoven, Arch. méd. belges **75**:393 (May) 1922.
Syphilis in Northern Africa. G. Lacapère, Ann. d. mal. vén. **17**:493 (July) 1922.
Syphilis in Relation to Abortion, Stillbirths and Infant Mortality. W. G. Cosbie, Am. J. Obst. & Gynec. **4**:40 (July) 1922.
Syphilis, Intracutaneous Gelatin Reaction in. A. Busacca, Wien. klin. Wchnschr. **35**:523 (June 8) 1922.
Syphilis. Intravenous Injection of Mercurosal in Treatment of Syphilis. W. T. Williams, Canad. M. A. J. **12**:401 (June) 1922.
Syphilis. The Kahn Precipitation Test in the Diagnosis of Syphilis: A Preliminary Study. H. L. Keim and U. J. Wile, J. A. M. A. **79**:870 (Sept. 9) 1922.
Syphilis, Modern Treatment of. L. W. Harrison, Brit. M. J. **2**:1 (July 1) 1922.
Syphilis. Myopathy with Inherited Syphilis. G. Milian and Lelong, Bull. et mém. Soc. méd. d. hôp. de Par. **46**:893 (June 2) 1922.
Syphilis of Central Nervous System, Results of Treatment in. R. Hearn, Brit. M. J. **2**:37 (July 8) 1922.
Syphilis of the Lung. J. Lecaplain, Bull. et mém. Soc. méd. d. hôp. de Par. **46**:930 (June 16) 1922.
Syphilis of the Tonsil. J. May, Rev. méd. d. Uruguay **25**:485 (June) 1922.
Syphilis, Present Status of Bismuth Treatment of. H. Haxthausen, Hospitalstidende **65**:342 (June 10) 1922.
Syphilis, Prophylactic Arsphenamin Treatment of. W. Schönfeld, München. med. Wchnschr. **69**:811 (June 2) 1922.
Syphilis, Reinfection with. Carle, Ann. d. mal. vén. **17**:497 (July) 1922.
Syphilis, Serodiagnosis of, by Flocculation. C. Bruck, Deutsch. med. Wchnschr. **48**:825 (June 23) 1922.
Syphilis, Spontaneous Cure of. F. Lesser, Med. Klin. **18**:824 (June 25) 1922.
Syphilis. Ten Cases of Delayed Congenital Syphilis. E. D. Spackman, Lancet **2**:65 (July 8) 1922.
Syphilis—Three Years' Observation. E. J. Trow, Canad. M. A. J. **12**:455 (July) 1922.
Syphilis, Treatment of, with Bismuth. H. Müller, München. med. Wchnschr. **69**:547 (April 14) 1922.
Syphilis, Treatment of, with a French Arsenical. J. A. Ortiz, Semana méd. **1**:798 (May 18) 1922.
Syphilis, Value of Formol-Gel Test for. S. Ramakrishnan, Indian M. Gaz. **57**:254 (July) 1922.

Syphilitic Backache. W. Thompson, Am. J. M. Sc. **164**:109 (July) 1922.

Syphilitic Lesions. Gangrene of Fingers Associated with Secondary Syphilitic Lesions. G. Guillain and C. Kudelski, Bull. et mém. Soc. méd. d. hôp. de Par. **46**:917 (June 9) 1922.

Syphilitic Serums in Relation to Specificity of Immunity Reactions, Properties of. J. Holker, J. Path. & Bacteriol. **25**:281 (July) 1922 .

Tabes, Amyotrophic Paralysis Early in. W. Schmitt, Med. Klin. **18**:436 (April 2) 1922.

Tabes in Two Europeans from African Syphilis. A. Sézary and J. Alibert, Bull. et mém. Soc. méd. d. hôp. de Par. **46**:816 (May 19) 1922.

Teeth. Eruption of First Teeth and Congenital Syphilis. E. Moody, Missouri State M. A. J. **19**:295 (July) 1922.

Tonsil, Syphilis of. J. May, Rev. méd. d. Uruguay **25**:485 (June) 1922.

Urine of Syphilitic Patients After Intravenous Injections of Arsphenamin, Elimination of Arsenic in. C. Weiss and G. W. Raiziss, Arch. Int. Med. **30**:85 (July) 1922.

Venereal Battalion, Development of. C. M. Williams, Mil. Surgeon **50**:177 (Aug.) 1922.

Venereal Disease in Nürnberg, Spread of. L. Voigt, München. med. Wchnschr. **69**:861 (June 9) 1922.

Venereal Disease, Prophylaxis of. V. Hernández Usera, Bull. Porto Rico M. A. **16**:114 (June 30) 1922.

Via Veneris. H. H. Rutherford, Mil. Surgeon **50**:173 (Aug.) 1922.

Wassermann and Sigma Tests. W. T. Collier, Lancet **2**:274 (Aug. 5) 1922.

Wassermann "Antigen" and Opacity of Mixture of Serum in Progressively Increasing Concentrations of Sodium Chlorid. J. Holker, J. Path. & Bacteriol. **25**:291 (July) 1922.

Wassermann Reaction. A. Dulière, Arch. méd. belges **75**:510 (June) 1922.

Wassermann Reaction as Index of Cure, with Special Reference to Value of Cold Fixation in Technic of Test. C. H. Shearman, M. J. Australia **1**: 656 (June 17) 1922.

Wassermann Reaction, Relative Value of Human and Guinea-Pig Complement in. A. F. Hayden, Brit. J. Exper. Path. **3**:151 (June) 1922.

Wassermann Test, Hecht's Modification of. W. Loele, München. med. Wchnschr. **69**:885 (June 16) 1922.

Wassermann Test in Spinal Fluid. Cestan and Riser, Ann. d. mal. vén. **11**:365 (May) 1922.

Wassermann Test, Standardization and Preservation of Complement Serum for. E. H. Ruediger, J. A. M. A. **79**:551 (Aug. 12) 1922.

Wassermann Variations: A Study of the Serums of Seventy-Five Patients by Eight Laboratories. L. J. Palmer, J. A. M. A. **79**:724 (Aug. 26) 1922.

Yaws and Syphilis, Relation Between, as Observed in American Samoa. J. C. Parham, Am. J. Trop. M. **2**:341 (July) 1922.